THE RUBBER AGE

ESTABLISHED 1917

COVERS ALL PHASES OF THE PRODUCTION AND MARKETING OF CRUDE RUBBER AND THE MANUFACTURE AND DISTRIBUTION OF RUBBER GOODS

Vol. 39 APRIL, 1936 No. 1

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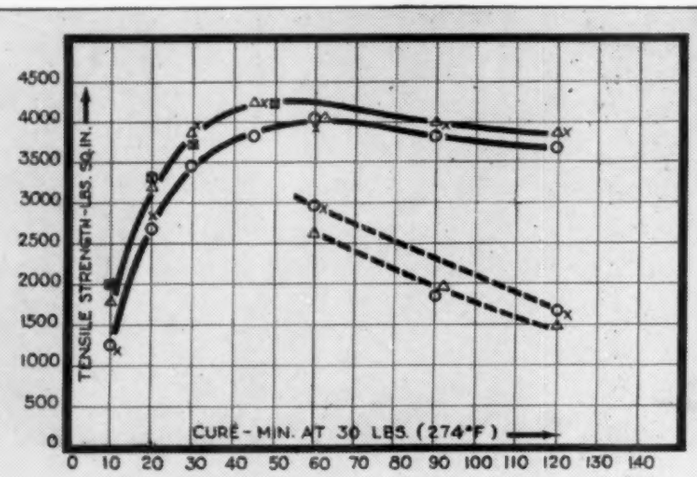

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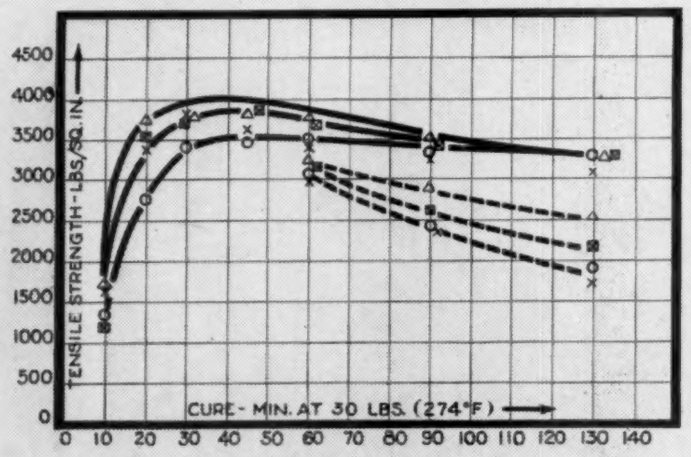

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The Rubber Age

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Vol. 39 APRIL, 1936 No. 1

What Is the Rubber Industry Headed For?

By JOHN M. BIERER

Factory Manager, Boston Woven Hose & Rubber Co.

The author of this article, written especially for THE RUBBER AGE based on remarks made at the Rhode Island Rubber Club on March 13, likens the rubber industry to Dr. Jekyll and Mr. Hyde—an industry which on one hand has not only improved the quality and uniformity of its wares but prolonged their life and reduced the cost of manufacture, and on the other hand has resorted to low prices, ridiculous guaranties and wasteful merchandising tactics all of which have resulted in a woeful lack of profits. How much longer will this be tolerated?, he asks.

ROBERT LOUIS STEVENSON wrote a story entitled *Dr. Jekyll and Mr. Hyde*. Dr. Jekyll, an estimable physician engaged in scientific work, was a credit to his community. Mr. Hyde on the contrary was a ruthless villain, who committed many crimes and terrorized his neighbors.

Of course these characters represent two sides of the same person. Dr. Jekyll became Mr. Hyde by taking a certain drug; Mr. Hyde was transformed into Dr. Jekyll by taking more of the same drug. As time went on, more and more of the drug was required to change Mr. Hyde back into Dr. Jekyll; finally, no amount of the drug would bring about the transformation, and Mr. Hyde died a discredited degenerate. The rubber industry offers an excellent analogy to the imaginary person described by Stevenson.

It is generally agreed that the purpose of any large company or industry is three-fold: to give its customers at a reasonable price what they desire; to recompense all its employees properly; and to return a reasonable profit to its investors. The rubber industry has fulfilled the first two requirements satisfactorily. With respect to the final requirement it has been a perfect Mr. Hyde, a villain, where investors are concerned.

In the opening paragraph of *Dr. Jekyll and Mr. Hyde*, a philosopher says: "I let my brother go to the devil in his own way." The question might be asked by some company, apparently heedless of its own destruction, "What business has another company to be concerned whether or not we are heading straight for

bankruptcy?" The answer is that no one company or group of companies can adopt this policy without dragging the whole industry down with it. It is therefore the business of everyone in the rubber industry to do his utmost to combat the destructive tactics of Mr. Hyde.

Goodyear As An Illustration

Charles Goodyear is a good illustration of Dr. Jekyll and Mr. Hyde. In 1839 he discovered vulcanization, and the tremendous growth of the rubber industry since that time has resulted almost wholly from this discovery. However, the industry has not been satisfied merely with the good things which Goodyear discovered, but has insisted on copying to a great extent his faults. He was often in financial troubles. After he discovered vulcanization and should have been headed toward financial security, he borrowed money, went to Europe, and took out patents on his invention in a number of countries. He borrowed $80,000 for expositions in London and in Paris. These were such financial failures that he had to sell his wife's jewels to obtain money enough to return to America. As a scientist he was a benefactor to the rubber industry; as a business man he was a failure. His story is the story of many rubber companies.

The first important activity of Dr. Jekyll after the discovery of vulcanization was his development of plantation-grown rubber. In 1876 he had the foresight to gather 70,000 rubber seeds in the forests of the Amazon and to ship them first to England, where they were grown to seedlings, and then to the Far East, where they were planted. In 1910 native rubber still dominated the market, but by 1918 plantation rubber had attained supremacy. However, Mr. Hyde then appeared, and as a result of his economic mistakes the native threatens again to dominate the crude rubber market.

With ample quantities of uniform rubber available, Dr. Jekyll, the scientist, has accomplished wonders in manufacturing rubber goods. This he has done without inflicting on the consumer any great fluctuations in prices, in spite of the fact that his chief raw material, rubber, has varied from less than three cents to over three dollars per pound, a variation of ten thousand per cent. Probably no other great industry has been faced with such a variation in the price of its principal raw material during a comparable period.

About 1910 Dr. Jekyll introduced organic accelerators. Almost from the time of Goodyear's discovery, Dr. Jekyll knew that rubber and sulfur react very slowly alone, and he found it necessary to use certain inorganic oxides, such as litharge, magnesium oxide and lime, to accelerate vulcanization. In 1914 Bayer and Company of Germany patented a large group of organic compounds for the vulcanization of rubber. This patent was finally declared invalid because it had been anticipated by work in this country by Oenslager and others, and also because some of the claims were absurd. Organic accelerators enabled Dr. Jekyll to vulcanize rubber in much less time at much lower temperatures, and to obtain products with physical properties far superior to any ever before obtained.

The next problem attacked by Dr. Jekyll was that of finding a substance which would improve the resistance of rubber to abrasion. Up to that time zinc oxide was the best ingredient for this purpose, but it was soon discovered that carbon black gives far better results. This new ingredient toughens rubber tremendously, and thereby greatly increases the life of tire treads.

Dr. Jekyll now had another serious problem on his hands, the difficulty of dispersing his new carbon black in rubber. However, he soon found that softeners would overcome this difficulty, as a result of which discovery they have become essential ingredients.

In the course of extensive investigations of catalysts, two French professors, Moureu and Dufraisse, discovered around 1919 that very small proportions of certain organic substances greatly retard the oxidation of rubber, paint, oils and numerous other materials. Naturally the rubber industry was quick to take advantage of this important discovery, and to utilize it for producing rubber articles with a life expectancy of many years. These substances have become generally known in the rubber industry as antioxidants, and they are now used in practically all rubber compounds.

In 1925 crude rubber increased in price to $1.25 per pound. It was during this rise in the price of rubber that Dr. Jekyll more fully recognized the value of reclaimed rubber. He found that many rubber compounds of identical quality can be made either with a combination of new rubber and reclaim, or with new rubber alone. The rubber industry now takes advantage of this fact, and reclaimed rubber has become a shock absorber to minimize the tremendous variations in the price of rubber.

Rubber was first used several centuries ago in the form of latex for making wearing apparel. Several hundred years passed before it again became of any importance in the manufacture of rubber goods. Latex already vulcanized while still liquid, and latex which is vulcanized after drying, are being used more and more extensively. Several years ago an enthusiastic rubber technologist made the statement that mills and calenders would be obsolete within ten years, and though this extravagant statement has no chance of becoming true, the increasing use of latex indicates what is to be expected of Dr. Jekyll in the future.

For many years it has been suggested that since numerous natural products have been duplicated synthetically, it should also be possible to synthesize rubber. In most cases the less the person knew about rubber, the more emphatic he was that this could be done. Mr. Hyde has often endeavored to perpetrate this swindle on the industry, and the ingenuity of some of his schemes has misled many victims. Dr. Jekyll on the contrary has done pioneer work of great importance on synthetic rubber. The complex structure of rubber makes this problem extremely difficult. Some of the finest work has been done, not in duplicating natural rubber synthetically, but in developing substitutes for rubber. Thiokol and DuPrene, so far the most successful, are of great potential value in case of a national emergency.

Development Of Tire Fabrics

Most of Dr. Jekyll's work so far described has dealt with compounding. Dr. Jekyll has also been active as an engineer, and has developed new fabrics, particularly cord fabrics for tires and other products. He has changed the shape of tires, lowered the pressure, altered the design and reduced blowouts, one of the greatest hazards of motorists. It is only Mr. Hyde who grossly exaggerates and insinuates in advertisements that blowouts have been eliminated.

Due to the work of Dr. Jekyll, the mileage of tires has increased tremendously. Twenty-five years ago the mileage was probably under four thousand, whereas today it is not unusual for a tire to go twenty or thirty thousand miles, or even more. At the present time the cost of a tire per mile is about five per cent of what it was twenty-five years ago.

In recent years Dr. Jekyll has also been active in improving the equipment used in manufacturing rubber goods. In some ways he has not done such fine work in this respect, but he has accomplished considerable in tire-making machinery. The Banbury mixer has been of great economic value in the manufacture of rubber goods. The continuous curing of insulated wire and belting is an important step forward.

In the testing of rubber products Dr. Jekyll has also done very creditable work. He has stressed more and more the value of tests which duplicate service conditions, rather than of stereotyped laboratory tests such as tensile strength. His work on the artificial aging of rubber has led to great improvements in the aging properties of rubber goods, and has also made it possible to determine the relative merits of antioxidants. The Geer oven was one of the earlier efforts along this line. The oxygen bomb closely duplicates natural aging. The air bomb, which utilizes heated and compressed air, is of value for certain types of products.

It is obvious that Dr. Jekyll has been of the greatest benefit to the consumer of rubber products, and could also have been to the industry itself. Not only has he improved the quality and uniformity of rubber goods, but he has prolonged their life and reduced their price. He has also been very faithful to the employees of the rubber industry. By the new uses which he has found for rubber, he has increased the demand for rubber products, and has thereby put additional people to work. Dr. Jekyll has helped the investors by lowering the cost of manufacture, and by increasing demand he has done everything in his power to give the investors a reasonable return. At this point, however, Mr. Hyde appears and dissipates the greater part of Dr. Jekyll's efforts in behalf of the investor.

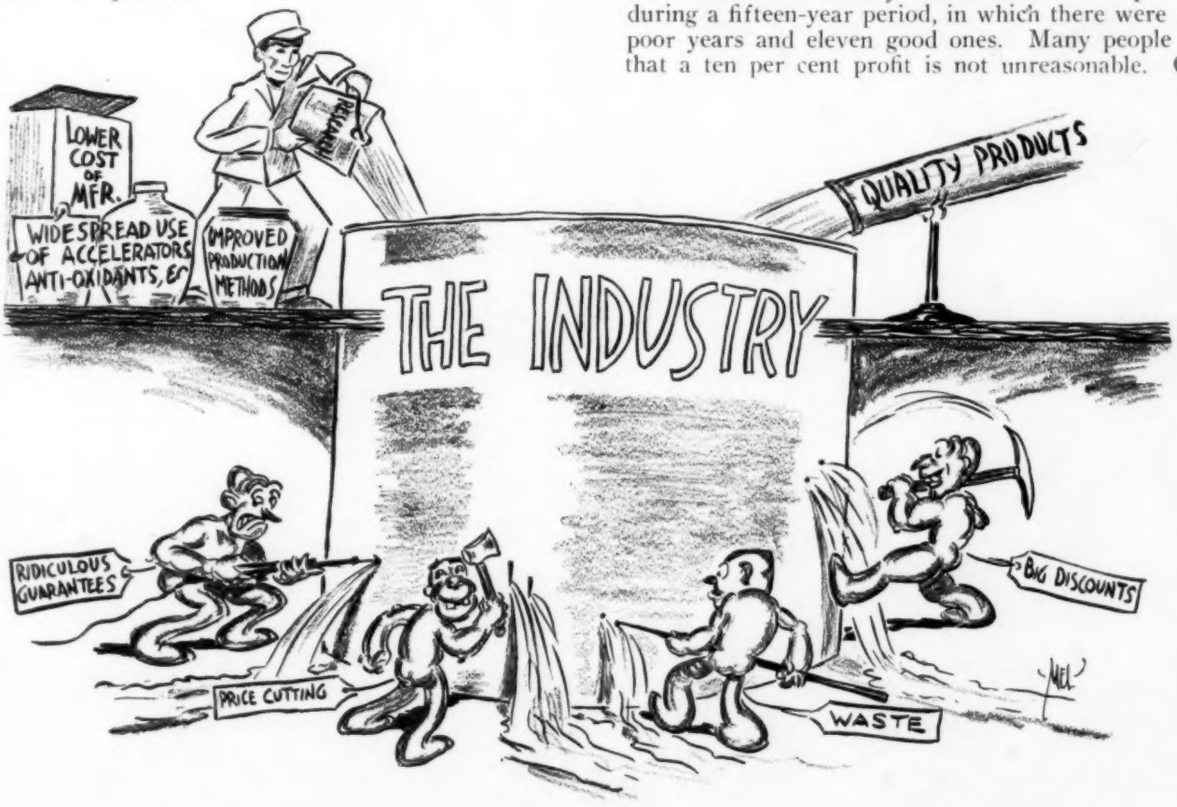
Many people have asked why it is necessary to have a Mr. Hyde in an industry where everything seems to be in favor of real success. No one has been able to answer this question.

In Stevenson's story, the one thing that Dr. Jekyll and Mr. Hyde had in common was a bank account. Through hard work Dr. Jekyll was able to accumulate money, but Mr. Hyde wasted this money in his villainous career. This has been the history of the rubber industry.

What are Mr. Hyde's crimes in the rubber industry? The most serious is a fiendish desire to prevent his employer, the stockholders, from getting any dividends, and even to dissipate their principal. Not satisfied with this, he wants to do the same thing to all others who have invested money in the rubber industry. He seems to derive the same satisfaction from having his name connected with a financial failure that the gangster derives from seeing his name associated with a serious crime. Though the exact composition of the drug mentioned in the story is not obvious, in the rubber industry the drug is money.

To begin with, the stockholders invest their money with perfect confidence, and innocently expect a reasonable return. However, Mr. Hyde, prompted by his insidious desire to waste money, soon squanders their investments, and then asks for a bond issue. Usually it is not long before he wants a second bond issue; after this is dissipated his standard procedure is to try to borrow money from the banks. The next step in his criminal career is to be slower and slower in paying the people who sell him raw materials. Finally he reaches a stage where he must pass into the hands of a receiver or reorganize. At this point Mr. Hyde gets his greatest satisfaction, because all the creditors are wiped out in one act.

Let us look at some specific crimes of Mr. Hyde. Income tax returns of the rubber industry from 1918 to 1932, recorded in an article by Holt in the *Survey of Current Business*, April, 1935, show that the net income for fifteen years was $25,107,000, while the sales for the same period were $16,918,535,000. This represents a return of only one-seventh of one per cent during a fifteen-year period, in which there were four poor years and eleven good ones. Many people feel that a ten per cent profit is not unreasonable. Cer-



tainly everyone feels that the rubber industry is entitled to seven per cent. If it had been so fortunate, it would have made forty-seven times the profit that it did in this period.

There are of course some prominent men in the rubber industry whose conduct has been above reproach, who have made their concerns prosperous, and who have in general shown none of the characteristics of Mr. Hyde. As a matter of fact, no one man is responsible for the unfortunate condition of the rubber industry. Rather a peculiar philosophy has infected the high management of a number of rubber companies—large and small—which has given free rein to Mr. Hyde and his wasteful tactics.

Futility Of Disastrous Price Wars

In contrast to the policy of the rubber industry as a whole, attention should be called to the marketing of chemicals and compounding ingredients to the rubber industry, some of which have actually been manufactured and sold by rubber companies. Here has been no disastrous price-cutting; the concerns supplying chemicals and compounding ingredients have been commercially more honest than has the rubber industry, and in general they have made a reasonable and a creditable profit. On the other hand in some of the disastrous price wars within the rubber industry, resembling guerrilla warfare, and in which Mr. Hyde played an active part, nothing has been gained.

Not only has Mr. Hyde sold his tires at disastrously low prices, but he has been reckless and malicious enough to offer ridiculous guaranties. In 1935 it was possible to obtain a guaranty for one year regardless of the number of miles driven, regardless of the type of road, in fact regardless of whether a tire was deliberately run over broken glass. If at any time during the year a tire had to be replaced, it was necessary to pay only for the months since its purchase.

In the summer of 1935 the writer's sons bought a small convertible coupe with five new tires, and also purchased a sixth tire. During the next three months they drove over all types of roads, two thousand miles of which were little better than trails, in the Rocky Mountains. They traveled 18,000 miles, and of course their tires were worn out. However, this did not bother them, because a generous rubber company was perfectly willing to give them six new tires for the price of one and one-half tires; in other words, the cost was slightly over one-tenth of one cent per mile.

The tire industry has, however, no monopoly on foolish guaranties. Manufacturers of mechanical rubber goods sell gasoline hose with an unqualified guaranty of one thousand days, in spite of the fact that the average life of such hose is only eighteen months; they cheerfully replace hose which has been run over by a truck, or which has been left in a tank and pulled apart by an automobile leaving the station. However badly the hose has been abused, it is replaced. The guaranty on tires and hose might be excusable if the prices were high enough to warrant this type of adjustment, but the prices have been absurdly low.

Had the rubber industry made a reasonable profit, there would have been no complaint from the consumers, and they would have continued to buy just as large a volume of rubber goods. If tires cost ten per cent more than they do, the consumer would still receive a wonderful value, and the investor would obtain a reasonable return on his money. Though tires are chosen as an example, this statement applies equally well to other branches of the industry.

Mr. Hyde excuses himself for his misdeeds by saying that he has only been following in someone else's footsteps. It would appear that very few people in the rubber industry are willing to allow a company to go unaccompanied into bankruptcy, and that all that any company need do in order to start a procession toward bankruptcy is to initiate some foolish policy.

In many companies the stockholders outnumber the employees, but the fewer wage earners are better organized, and have received much better treatment than the stockholders. There are a few "brain trusters" and some radical labor unionists who feel that it is possible for a company or a nation to loaf itself out of a depression, but not even the most radical have suggested anything less than a thirty-hour week. Practically all manufacturers who have been successful in the broadest sense of the term know that a thirty-hour week is impracticable. Nevertheless, even before the present administration was in power, a part of the rubber industry initiated a thirty-hour week with correspondingly high wages. Already in 1936, when attempts have been made to remedy to some extent this mistake, this policy has caused serious labor difficulties. There seems to be little excuse for a part of the industry to pay an average wage of nearly $1.00 per hour when the investor has received almost no return.

Mr. Hyde has also made ridiculously low prices to chain stores, mail order houses and automobile companies. In many cases his prices to these retail organizations have been lower than his prices to his legitimate wholesale distributors. Of course all these retail organizations have wanted to buy cheaply, but they have not asked the rubber manufacturers to handicap themselves unreasonably; the manufacturer has been willing to handicap himself.

Recently a rubber manufacturer purchased from a service station of a large automobile company a piece of radiator hose which he himself had made. The price was 6½ times that at which he had sold the hose, in other words, the automobile company made 550 per cent profit. The manufacturer on the other hand sold this radiator hose for less than his factory cost. The manufacturer should have sold it for 50 per cent more than he did, and even if he had, the automobile company would still have made 333 per cent profit. It has been reported that without the concessions of the rubber industry to the mail order houses, chain stores and automobile companies, below what would have been a reasonable price, the rubber industry would have made a reasonable profit. Not only has Mr. Hyde given his investors' money away, but he has handicapped his more profitable customers.

Are Bankers Actually In Control?

It has been reported that banks and bankers control some of the rubber companies. Bankers are reputed to be good business men, and when in control of a company are supposed to demand that the company conduct its business on a high plane, and give the bank's clients reasonable protection when they invest money in the company. If bankers are actually in control of a significant part of the rubber industry, it has certainly been very difficult to see wherein they have done anything to improve conditions. The conclusion is either that they are not in control, or that they do not know how to protect the money of their depositors when it is invested in a rubber company.

How much longer will the investors tolerate the inexcusable, inefficient and wasteful actions of their best paid hired men? "Will Hyde die upon the scaffold? Or will he find the courage to release himself at the last moment? God knows. . . ."

Development of "Buna"— Germany's Synthetic Rubber

A Complete Resume of the Research Activities which led to the Introduction of "Buna," Combined with a Description

By Alfred Salmony, Ph.D., Dipl.-Eng.

AT the recent motor car exhibition in Berlin, Germany, the first samples of the new synthetic rubber "Buna" were shown, as well as pneumatic tires made from this new material. The I. G. Farbenindustrie-A.-G. (the German aniline dye trust) states that after many years of research the complicated problem of manufacturing artificial rubber on a large scale has been solved. The public, of course, is wondering why such laborious and costly experimental work should have been necessary to obtain a product, which, after all, may be gained from the latex-giving plants more easily and at lesser expense. Before an answer can be given it will be necessary to review the historical development of the rubber growing and rubber manufacturing industries.

It was during the last twenty years of the 19th century that the tremendous rise took place in the industry manufacturing bicycles and motor cars, thereby greatly increasing the consumption of rubber. This, of course, led to a sharp rise in the price of the raw material. It will, therefore, be of interest to give a short survey of the quotations of rubber in Germany during the last hundred years:

(Price per Kilo of rubber)

1836	RM.	4.71	1909	RM.	15.43
1837	RM.	5.64	1910	RM.	18.60
1842	RM.	4.11	1913	RM.	6.19
1843	RM.	2.58	1914	RM.	6.00
1849	RM.	2.97	1919	RM.	4.49
1860	RM.	5.73	1921	RM.	1.52
1861	RM.	3.82	1928	RM.	2.05
1866	RM.	5.77	1929	RM.	1.93
1873	RM.	6.62	1930	RM.	1.11
1880	RM.	8.39	1931	RM.	0.55
1883	RM.	10.65	1932	RM.	0.32
1904	RM.	11.05	1933	RM.	0.41
1905	RM.	12.26	1934	RM.	0.76
1906	RM.	11.82	1935	RM.	0.70

Increase In World Consumption

How can these considerable changes be explained? The comparatively unimportant changes of the last century up to the 80's are easily explained: they are due to crops, to the labor situation in the rubber producing countries, and to similar causes. From 1880 on increased demand caused a considerable rise in prices which led to experiments with the growing of latex-giving trees in such countries as were favored by climate. It takes at least six years before a crop can be raised on such plantations. Moreover, experiences in the management of such plantations were lacking, and in fact, it was not until 1906 that the first "plantation rubber," the quantity of which amounted to about 1% of the world's production, came on the market. At that time world demand amounted to about 67,000 tons, gradually rising to 863,000 tons in 1933 and to 1,031,000 tons in 1934.*

Development Of Plantation Rubber

Meanwhile, plantations developed so rapidly that they were soon able to fill 99% of the world's demand while "wild rubber" output fell to a bare 1% of world demand. Although production did not keep pace with the demand, it grew to such an extent that during the world-wide economic crisis prices reached the lowest level on record, viz: RM. 0.32 per kilo in 1932 as compared with the record price of RM. 18.60 in 1910. As more and more plantations were laid out the center of production gradually shifted to the Southeast of Asia with its favorable labor and transport situation. The output of raw rubber in the old producing countries, especially in Brazil, was limited to a few special qualities.

On account of falling prices the production of raw rubber became less profitable and restriction measures were resolved upon. Within the British Empire the government used the so-called Stevenson plan in order to decrease production from 1922 to 1928, which, however, led to no more than a temporary rise in prices, as, at the same time, and within the same period, production in the Dutch East Indies soared by no less than 140%. It was only in April, 1934, that the governments of practically all of the rubber producing countries of Asia came to an agreement on restriction the effects of which are already noticeable. In September, 1935, the world market prices were about 106% higher than the average of the year 1932.

The current restriction agreement is endangered by the considerable stocks on the world's markets, by the marked improvement in the handling of scrap rubber —in this the Americans have been particularly successful—and by the not easily controlled offers from native plantations. It is a fact however that against more than a million tons in 1934 world production fell in 1935 to an estimated amount of 843,000 tons.*

It is not surprising that chemical manufacturers, especially in Germany, who were justly proud of their great success towards the end of the last century in manufacturing aniline dyes and synthetic indigo-blue and who greatly under-estimated the tremendous difficulties of rubber synthesis, made every effort to become the decisive factors in the struggle for the all-

* Rickinson quotes world consumption for 1933 at 818,370 tons and 1934 at 927,000 tons. World production for 1935 is quoted at 863,007, tons, 14% below 1934.

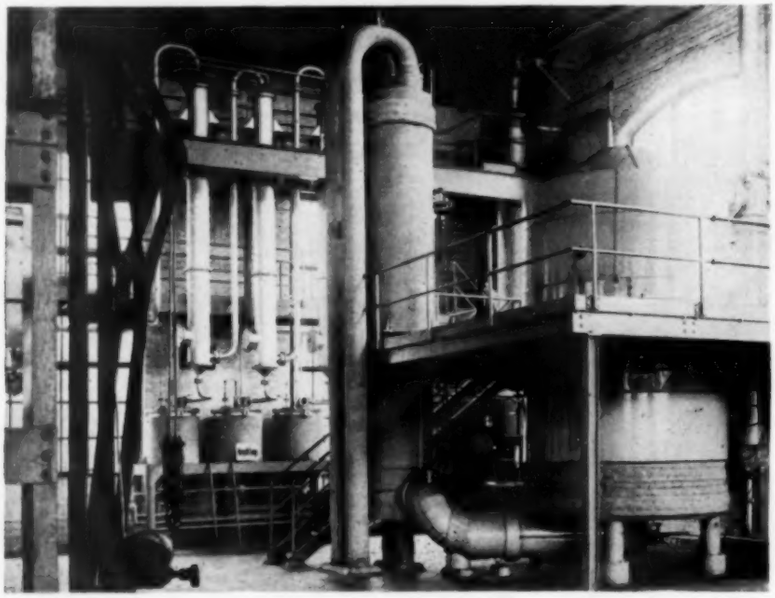
important raw material, rubber. They tried to do so by means of a highly qualified synthetic product.

In 1905 and 1906 the German investigator Harries succeeded in proving the rubber molecule to be a polymer product of the unsaturated hydrocarbon Isoprene, C_5H_8, a discovery which seemed to open a favorable future for the synthesis of rubber. But scientists were unable to explore how many of the Isoprene molecules should be put together in order to obtain a product which in its technical qualities was to be equal to the natural rubber. Staudinger and his co-operators were among the first to show that these qualities are dependent upon the extraordinary size of the rubber molecule.

It is nowadays generally assumed that the molecular weight of plantation rubber is between 70,000 and 140,000, and that the molecule is likely not to be spiral but to possess the form of a thread. It is a fact that in each rubber molecule there is on each Isoprene part a double bond in the carbon skeleton which has an increased liability of reaction. By saturating this double bond with hydrogen without deforming the molecule the so-called hydro-rubber is obtained. Its elasticity is unchanged but it does not react chemically, the hydrocarbon being fully saturated. The amount of double bond in the rubber molecule is of some importance for vulcanization purposes. It is also important for the manufacture of chlorinated rubber frequently used in paints and varnishes.

We know that in 1839 Charles Goodyear discovered the fact that sulfur, if subjected to high temperatures, deprives rubber of its stickiness. Later on the discovery was made that under certain circumstances it was profitable to use selenium instead of sulfur. During the process of vulcanization sulfur is added to the double bonds thus forming chemical "bridges" between neighboring rubber molecules. As a rule, with temperatures of about 140° C., the process of vulcanization lasts for several hours, but may be accelerated by applying a certain number of organic substances, the so-called vulcanization accelerators. Thus additional reactions leading to a lessening of the quality of the finished rubber article are avoided. Almost unnecessary to add, it is also possible to vulcanize synthetic rubber.

In 1909 the German chemist Fritz Hoffmann, of the Elberfelder Farbenfabriken vorm. Friedr. Bayer & Co., succeeded in manufacturing the synthetic so-called methyl-rubber, whereupon, at the meeting of the Eighth International Congress for Applied Chemistry in New York, the general manager of the firm, the late Geheimrat Carl Duisberg, afterward chairman of the I. G. Farbenindustrie-A.-G., declared: "We have already made synthetic rubber in considerable quantities. Prominent experts have examined the article in question as to its practical use and Mr. K. Harries of Kiel, who during many years of intense scientific work prepared the ground, has examined it scientifically and has stated that it is real rubber."



An interior view of the I.G. Farbenindustrie A.G. factory showing the complicated machinery used in the manufacture of "Buna," Germany's synthetic rubber.

During the war Germany was cut off from its supply of raw rubber, previously amounting to about 20,000 tons per year. The production of synthetic rubber suddenly became a military problem. With energy and under great difficulties the Elberfelder Farbenfabriken undertook in its plant at Leverkusen to manufacture the artificial product. They had the satisfaction of producing a hard rubber which was equal to the highest demands and was promptly put into the accumulator boxes of submarine boat batteries and elsewhere.

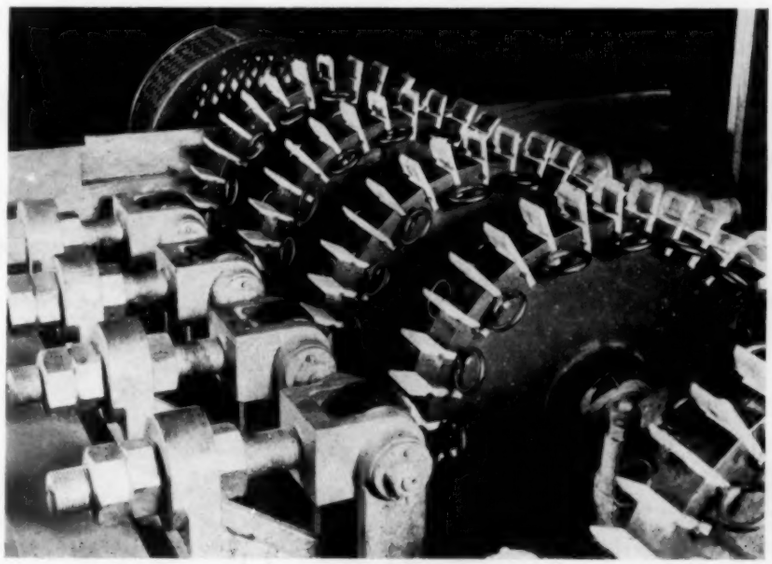
But the soft rubber which was also manufactured from synthetic methyl-rubber was a failure. At the general meeting of the Deutsche Bunsen-Gesellschaft in 1918 Prof. Duisberg again referred to the product and said that this artificial soft rubber had been a keen disappointment. "The negative attitude of the rubber manufacturers," he said, "was not unreasonable. Our article had, it must be admitted, characteristics which made it unsuitable for practical uses." It turned out that the soft rubber, made from the purest hydrocarbon, was influenced by oxygen and was slow of taking up sulfur during vulcanization. The soft rub-

ber obtained was not equal to the natural article but rather resembled leather.

In spite of the fact that after the war the price of raw rubber fell to its lowest level, scientists never tired of their endeavors to manufacture artificial rubber and at the general meeting of the I. G. Farbenindustrie shareholders in 1929 Geheimrat Schmitt stated that the research work continued to be of a satisfactory character.

The indefatigable and uninterrupted work has now, seven years later, led to a successful end. The price of the new synthetic rubber, it is stated, will be no higher than five times the price of the natural product. It must not be overlooked that thus the price of the new article is considerably below the quotations of crude rubber of pre-war times, excepting the years from 1880 till 1913, during which the natural raw material reached the high quotation of RM. 18.60 in 1910. It may not unreasonably be hoped that, owing to restriction measures, in a not too distant time the price of the synthetic rubber will be much lower than that of the plantation product.

Further, the new material of the I. G. Farbenindustrie-A.-G. possesses qualities which are not to be found in the natural article and which by themselves would justify a markedly higher price. The soft rubber of the "Buna" material does not age so quickly, is less liable to be influenced by temperature, and does not soften or stick at temperatures higher than 100° C. Lastly, the resistance against deterioration when in use has increased to such an extent, that experiments with Buna-pneumatic tires have proved that the tires, particularly the treads, have nearly double efficiency. A special material, the "Buna-N" type, is



This flexing machine was part of the "Buna" exhibit featured at the recent Berlin automobile show to indicate the durability and resiliency of the product.

far superior in its resistance against swelling, i. e., it does not soften easily when in touch with benzene, lubricating oils, and other organic aliphatic liquids. A similar benzene-resisting rubber cannot be made from natural rubber.

Two German rubber factories have been pioneers in changing the manufacturing procedure, especially the vulcanization, in order to take advantage of the characteristic properties of the synthetic material. The usual process of manufacturing soft rubber out of natural rubber cannot be applied, or at least only partly so, to the synthetic material. The present methods however guarantee the excellent quality of the finished product, as proved by severe tests carried on with more than a thousand tires for a distance of over a million kilometres.

Synthetic rubber, as it is made by present methods in Germany, is chemically different from the methyl-rubber of war time. The manufacturing process is based upon butadiene and dimethylbutadiene, these materials being constitutionally related to the Isoprene (methylbutadiene), but easier obtainable under technical conditions. One of the processes of manufacturing butadiene is based upon acetylene which in Germany is produced at a comparatively low price and in unlimited quantities. Acetylene, in diluted sulfuric acid in the presence of mercury sulfate is, similar to the process of making synthetic alcohol, converted by oxygen to acetaldehyde. Under pressure the acetaldehyde is converted in alkali solution by means of a catalysator into aldol with hydrogen. Aldol under certain conditions easily forms 1.3 butylenglycol. From the latter, by splitting off 2 molecules of water, also by means of a special catalysator, butadiene is formed. The butadiene, which also originates as a by-product of the hydrogenation of coal and oils under pressure, is capable of polymerizing slowly, say for a period of one year, at average temperatures.

The above described process which leads to the rubber molecule may be accelerated when higher temperatures are applied. But this acceleration has its limits, and these limits are reached when by-products of a non-rubber character begin to be formed. Besides, merely the application of higher temperatures will not lead to the necessary high degree of polymerization, i. e., to the high number of butadiene molecules which combine into a final molecule of the largest possible size.

It was no doubt one of the greatest difficulties of the synthesis of rubber to develop methods of polymerization which were to result into a final molecule

of high molecular weight. The problem was solved by two different methods. The first was to imitate the growth of the rubber molecule in the tree by polymerizating in an emulsion, in other words by producing artificial latex-milk. The latter was easily obtained and at low temperatures and could be dealt with as if it were natural latex. The second method was to find suitable accelerators influencing in best manner the polymerization process and, accordingly, the final product. Oxidizing substances, such as peroxides, are added to the emulsions as accelerators of polymerization. But in non-emulsified materials other substances have to be used for polymerization such as metallic sodium in smallest globes.

It is but natural, that in Germany the substances applied as well as the working conditions of the polymerization process are kept strictly secret. It is a remarkable fact that the synthetic rubber may be easily mixed with the natural material at a ratio of 1 : 1. Tires for motor cars made from such mixtures, among them non-pneumatic so-called high elastic tires, have turned out to be no less successful than tires made of the synthetic material alone.

It is reported that in 1935 approximately 25,000 tons of synthetic rubber were made in Russia, where three different methods were developed. Alcohol is being used in the principal process which is costly since large quantities of potato spirits are not obtainable in Russia, only of corn spirits. Authentic figures regarding the expenses for manufacturing the Russian synthetic rubber are not known, but calculating the ruble to be equal to three French francs it is assumed that the price of the product is about ten times the price of raw rubber in the world markets. That the Russian government is very keenly interested in the rubber problem is proved by the fact that in provinces with a favorable climate extensive plantations of plants able to produce latex have been cultivated.

Conveyor Speeds Footwear Manufacture

DESIGNED especially for use in rubber footwear manufacture, a new production conveyor has recently been installed in a leading shoe factory. It is said to speed up manufacturing schedules and to create economies not possible heretofore.

The conveyor is installed in units and is the carousel or "merry-go-round" type. The unit is compact and requires a minimum of floor space compared to the production made possible. It is only 20 feet long from center to center of the sprockets. Operators take positions around it, each one doing a certain operation. As each last, which is attached to the conveyor, makes a complete revolution a rubber shoe is completed. As soon as the conveyor has made one revolution all lasts are in use and completed shoes are turned out in rapid succession.

One of the new features is that the last itself moves progressively with the various operations. The last is attached by means of a ratchet and swivel arrangement. This permits the last to be placed in every required position for the efficient application of the various parts of the shoe. Both the extreme portion of the toe and the extreme portion of the heel may be conveniently worked upon.

The operators receive books of the various pieces or component parts of the rubber shoe that have been properly cut for the particular size and style being fabricated. Each operator removes the pieces from the book, held before him on a rack, and places the same relative piece on each shoe as it passes along. The conveyor travels at a uniform workable speed and the lasts pass by each operator at a convenient working level.

The conveyor unit is very flexible because the lasts are easily removed and attached to accommodate the range of styles and sizes. The conveyor is also equipped with a variable speed control so that it can be operated at the proper speed, for the most efficient fabrication of various styles. The speed may be easily changed to accommodate the difference in the number of operations required for certain types of rubber footwear. The proper number of lasts are placed on the conveyor to care for the required number of operations necessary for the production of the shoe or arctic having the maximum number.

Although this conveyor unit has been designed particularly for rubber footwear production, it might easily be applied to other assembly operations.

The carousel or merry-go-round type of conveyor which is said to produce economies in the manufacture of rubber footwear.

Unemployment Insurance— Can Its Fund Remain Solvent?

By Herman Glasser

Tax Consultant

INSURANCE as applied to unemployment is a misnomer since unemployment is not and never can be an insurable risk. And unless employers, workers and legislative and administrative officials realize this fact, unemployment insurance as now inaugurated will not survive its experimental stage. Or if it does, it will only be by so increasing the rate of taxes as to put a burden on industry, which it will find unable to carry.

The Degree of Insurability

A risk is insurable even though its occurrence is certain, provided there is some definite basis for determining over a great number, the frequency of the happening of that event among that number. Thus, death is an insurable risk. So also, but to a somewhat lesser degree, are the risks of fire, accident and ill health. The degree of insurability is dependent on the possibility of preventing the insured from controlling the occurrence of the risk.

In the case of death, ill health and accident, the control consists of the natural desire of the individual to continue to live and retain his well-being. In the case of fire, the control consists in the fact that recovery cannot exceed the value of the property destroyed and thus there can be no profit, and in the case of planned loss for profit, the possibility of criminal prosecution.

With respect to unemployment, however, the situation is different. There are no statistics available, nor can any one determine in advance with any reasonable degree of certainty the extent of unemployment at any time in the future. Statistics of past unemployment, which cannot be regarded as even approximately accurate, establish the wide fluctuations which have occurred. According to a table prepared by the Committee on Economic Security appointed by President Roosevelt, an estimate of unemployment in prior years was made in employments, which are customarily covered by unemployment insurance plans. According to this table unemployment in the years from 1923 to 1929, varied from a low of 6 1/10% in 1929 to a high of 9 4/10% in 1924, and these were years of industrial activity and prosperity. If we take all the years for which percentages of unemployment are given in this table, we find that between 1922 and 1933 the rate varied from a low of 6 1/10% in 1929 to a high of 39 2/10% in 1933. To attempt to insure a risk which can fluctuate so widely over a short period would be sheer madness.

The reader should get clearly in mind the meaning of these percentages since I wish to make an adjustment in them and these figures as adjusted I will apply in determining the load which the Unemployment Insurance Fund can carry.

The above percentages are obtained by taking the number of workers and determining the percentage of those workers unemployed in the different years. Thus in 1929 out of every 100 workers, 93.9% were employed and 6.1% were unemployed which results in the percentage of 6.1% used in the table.

For the purpose of the discussion later on in this article, I will use as percentages the number of unemployed as against the number of employed, i.e., if 93.9% are working and 6.1% are unemployed, what percentage of those working is the number idle? The percentage arrived at is 6.5%. This is very important and the reader should bear this distinction very carefully in mind since in determining the extent of benefits which an unemployment fund can successfully carry the relationship is between those who are working and those who are idle.

Adjusting the percentage of unemployment as it appears in the table above referred to we find the following: that the lowest rate of unemployment was in the year 1929 when the percentage of unemployed against those who were working was 6.5%; in 1924 the percentage was 10.3%; and in 1933 it reached a high of 64%.

The more important reason for contending that unemployment is not an insurable risk is because it is controllable. It can be controlled by the employer, by the employee, by legislators who enact the laws, and by administrative bodies which prepare the regulations and administer the law. By controlling this risk is meant not only the control of employment and unemployment, but as well control of what shall be considered unemployment for which benefits are payable. In either case, the result is to increase or diminish the load which the fund is compelled to carry.

Before discussing whether this can be done and if so how, it may be desirable to set down briefly the provisions with respect to contributions and benefits in the New York State Unemployment Insurance Law using that act for the purpose of this examination.*

Contributions Under the Law

Under the New York Unemployment Insurance Law contributions are made by the employer in behalf of all covered workers at the rate of 1% of wages, for 1936; 2% for 1937 and 3% thereafter. Since no benefits are payable till 1938, the fund will start paying benefits with a reserve representing the contributions for 1936 and 1937 or approximately 3% of annual payrolls. Thus, in 1938 the fund will have available for the payment of benefits not only the 3% accumulated as a reserve, but also the 3% col-

* The laws so far adopted in eight other states and in the District of Columbia do not differ greatly from the New York Law in their provisions with respect to contributions and benefits.

lected in 1938 and thereafter the fund will have an income of 3% of payrolls and in addition any interest earned on the unexpended portion of the fund.

Benefits provided are 50% of full weekly wage with a minimum of $5 and a maximum of $15 per week payable after three weeks' waiting period, or if a worker becomes unemployed more than once in any one year, a maximum waiting period of five weeks during that year. If unemployment is due to industrial controversy or misconduct, the waiting period is ten weeks. The total benefits cannot exceed one week of benefit for each 15 days prior taxable employment with a maximum in any year of sixteen weeks of benefit.

With this brief summary of the tax and benefit provisions the first act to be determined is the ratio between contributions and benefits or the amount of employment necessary to support the benefits provided by the act.

This problem may be stated in the following form: 3% of the wages of how many workers for one year will make possible the payment of 50% of wages *for sixteen weeks* to how many unemployed. The reader will notice that the equation is between contributions for one year and benefits for sixteen weeks.

It will be found that a 3% tax rate will support payment of benefits to unemployed workers numbering 19½% of the number of workers for whom taxes are paid. Thus, if 100 workers are paying taxes the amount contributed by them will support benefits for 19½ workers for a sixteen week period. This percentage will be slightly more favorable by reason of the provisions for waiting period and limitation of benefits to number of days of prior employment.

Because of the percentage arrived at the general opinion is that based upon the average unemployment during the years 1923 to 1929 which as adjusted varied between 6.5% and 10.3% the plan is financially sound although it is conceded that if unemployment should ever again increase to the extent it did after 1929, the fund would become hopelessly insolvent; but disregarding periods of extreme depression and resulting unemployment, most people have come to the conclusion that the fund can remain entirely solvent.

This is a conclusion that I cannot agree with since in my opinion the rate of 19½% is not nearly accurate in determining the relationship between contributions and benefits. This should become quite evident from the following example.

Contributions versus Benefits

John Smith has employed 1000 workers. There is a decline in the demand for his product. He finds that he requires only 800 workers after January 1st, 1938. He lays off 200 workers who immediately become entitled to benefits and he continues operations with the remaining 800. After the 200 have exhausted their full quota of benefits (16 weeks) he rehires them and in their place lays off a different 200 workers. Immediately these become entitled to benefits and after they have exhausted their full quota of benefits (16 weeks) he rehires these and in their place lays off another 200 who also immediately become entitled to benefits for 16 weeks. In this case there will be during that year 600 workers receiving the full quota of benefits against contributions from 800 during the entire year, or a ratio of 75% which the fund concededly will be unable to support. In other words with 25% unemployment we have 75% of unemployment benefits.

If unemployment, therefore, is continually changing and different workers laid off to provide employment for those previously unemployed, the ratio of unemployed to contributors cannot exceed 6½% if the fund is to remain solvent and if the fund is to accumulate a reserve for periods of greater than average unemployment the percentage of unemployed must be less than 6½%. Comparing this percentage with the percentages of unemployment as given by the Committee on Economic Security we find that in all years from 1923 to 1929 with the exception only of the year 1929, the average unemployment was in excess of 6½%, and these years were boom years of great industrial activity.

Maintaining the Fund's Solvency

The dangers to the solvency of the unemployment insurance fund may be briefly enumerated as follows:

(1) The increase of benefits and extension of period for the payment of those benefits by legislative action. This may occur at times of little unemployment when legislators find the fund increasing and pressure is brought to bear by interests associated with unemployed. Or in times of severe unemployment when pressure is brought to bear upon legislators to relieve resulting distress.

(2) By administrative officials to whom has been delegated considerable discretion in providing regulations with respect to part time or seasonal employment.

(3) By continuous turnover of workers by their employers in order to provide benefits for all who may not be needed.

(4) By workers accomplishing the same result through their unions.

To guard against these possibilities it would be desirable:

(1) To develop an informed public opinion among employers and employees to prevent practices which may jeopardize the solvency of the plan;

(2) To educate the public as to the theory and purpose of unemployment insurance;

(3) To create an active interest on the part of employers and employees in all matters affecting procedure with respect to benefits;

(4) To require that employers participate in all proceedings in connection with claims for benefit by former workers;

(5) To require that employers adopt the practice of distributing work on short time to all workers rather than full time to some workers;

(6) To advocate the adoption of regulations that seasonal workers be not entitled to benefits except for loss of work during the customary period of their season;

(7) To advocate the adoption by all states of strong merit rating provisions so that employers who resort to practices which increase benefits will be required to pay larger contributions;

There are others but those enumerated will probably be sufficient to create among those chiefly concerned an interest in a sound, conservative and financially safe administration of this scheme of unemployment insurance.

It would surely be a tragedy if after industry had contributed hundreds of millions of dollars towards this social experiment it had to be abandoned because of failure to understand its basic principles. Or if not abandoned, it be continued by increasing the burden on employers. In the opinion of many the latter is more likely if contributions are found to be insufficient.

"Lastex" in Footwear

Recent Developments, Including a New Shoemaking Technique, Have Resulted in a Wide-Spread Adoption of This Material

ONE of the most important developments in shoemaking in recent years has been the development of new elastic fabrics made with "Lastex," the permanently elastic yarn which has found such wide uses in other industries. The fundamental idea back of this new type of shoe fabric is that it makes possible a fit and comfort which the manufacturers claim could not be obtained by the old type rigid materials.

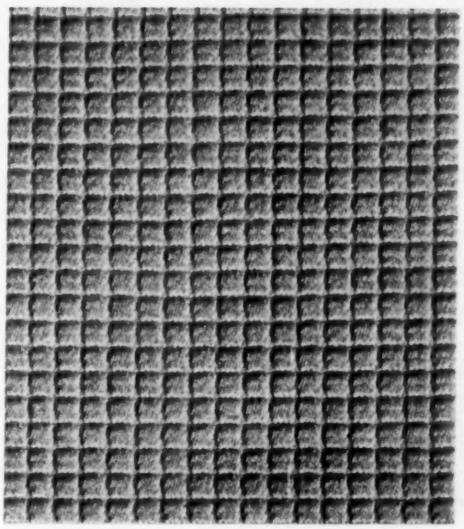
The development of these new materials is the result of almost three years of experimental work during which two major problems had to be solved: First, the degree and strength of elasticity which is desirable for practical use in footwear and, secondly, a new shoemaking technique which would overcome the difficulties in the lasting of elastic fabrics. The manufacturers of "Lastex" report that both of these problems have now been solved and that highly satisfactory results are being obtained by several manufacturers who are placing "Lastex" shoes on the market.

The principal difficulty which had to be overcome in the lasting was the fact that in order to preserve the correct shape of the finished shoe it was necessary that little or no tension should be placed on the "Lastex" materials. Several methods have been used to overcome this difficulty and one of the most successful has been the sewing of a rigid tape on to the "Lastex" quarters to hold them in proper position, this tape being removed when the lasting was completed.

This shoe is made with a combination of blue kid and blue "Lastex" gabardine fabric.

The latest advance in the application of "Lastex" fabrics to footwear is the appearance on the market of a novel material named Pleatex, which is a combination of pleated leather backed with a "Lastex" fabric and finished in the shoe with a "Lastex" binding. This new material is being offered to the trade by Evelyn Ziniti and Alfred Vamos, two designers with established reputation, who are most enthusiastic about its possibilities and who have reported they have already interested a number of nationally known manufacturers.

The promoters of Pleatex claim that it has many important advantages over other "Lastex" fabrics or any type of elastic goring hitherto used. In particular the



Design of one of the new Everlastik "Lastex" shoe fabrics which resemble similar materials of non-stretch construction.

use of the "Lastex" binding makes it possible to use Pleatex in any shape or design desired and for practically any type of shoe. This marks of course a most important advance over the old type of elastic goring, which was necessarily restricted to use in such parts of the shoe where a straight top line was possible. Pleatex is moreover a decorative material, available in any color and therefore does not have to be concealed by the use of buckles or other ornaments such as are commonly used with regular goring.

Its manufacturer also points out that the use of the "Lastex" backing means that its elasticity will remain unimpaired for the life of any shoe in which it is used, and that it opens up the possibilities of elasticity to virtually every type of shoe. In proof of their claims Miss Ziniti and Mr. Vamos are showing a wide range of models in which Pleatex is used in an equally wide variety of ways.

The first "Lastex" shoes were presented in 1932 by one of New York's leading retailers and incorporated a suede type of material which was employed in the vamp. These shoes were satisfactory as far as fit and comfort were concerned but the material itself did not possess the wearing qualities desired. After a long period of further experiments gabardine and tweed "Lastex" fabrics were developed which, combined with a "Lastex" batiste lining, were incorporated in the quarters of shoes which were presented to the trade in November, 1934. These shoes met with favorable reception by both dealers and customers, and the firm which first placed them on the market was quickly followed by others who developed new models and further extended the idea.

It is true, however, that the 1934 shoes still left

something to be desired in appearance, due to the fact that the shoemaking technique for this new type of footwear had not then been fully mastered. In the intervening year, however, substantial progress has been made and it is now claimed that a satisfactory solution has been found for all the technical problems involved.

A number of important manufacturers have announced their intention of incorporating "Lastex" footwear in the 1936 line and it seems probable that the coming year will see a marked growth in the popularity of this new type of footwear, especially as many new fabrics are being developed, including meshes, jacquards, and straps for evening and sandal type of shoes.

The firm of Everlastik, Inc., of Chelsea, Massachusetts, has recently introduced an attractive line of "Lastex" shoe fabrics designed by Miss Jane Wheeler, stylist of the company, for high style form-fitting footwear. Everlastik materials are said to have the fine appearance of similar fabrics of non-stretch construction. One shoe model sponsored by this organization, which has catered to the requirements of the shoe industry for half a century, is a combination of blue kid and blue Everlastik "Lastex" gabardine fabric. The shoe has a Gypsy vamp trimmed with navy patent-leather tongue, set off by a navy blue patent-leather tailored bow, the quarter being of the "Lastex" gabardine.

"Lastex," the yarn on which these fabrics depend for their permanent elasticity, is the first spun elastic thread ever made. Its base is a chemical compound containing a small percentage of rubber which is forced through spinnerets in much the same manner as cellulose in the making of rayon. The fine round thread thus produced is then covered on a patented machine with silk, cotton, or worsted according to the type of fabric in which it is to be incorporated. Since its introduction to the market in 1931 "Lastex" has won wide popularity in the corset, underwear, millinery and bathing suit industries and its use is being rapidly extended in many other directions. Adamson Bros. Company, Inc., are sole distributors of "Lastex" yarns.

Vulcanization by High Frequency

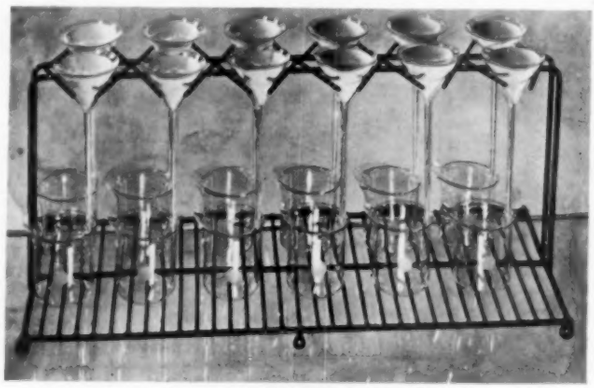
WHERE large or irregular sections of rubber are concerned, rubber's low thermal conductivity often constitutes a difficulty in vulcanization. According to a recent issue of *La Technique Moderne,* a process has been developed to obtain perfectly uniform heating by subjecting the rubber to an electrostatic field, alternating at a frequency of from 10 to 15 million cycles per second. The rubber is placed between electrodes to form a condenser which is then charged from the high frequency supply. Heat is generated in the body of the rubber by dielectric loss, and the process, which is controlled by reference to the electrical input, is completed in a matter of minutes compared with hours of former methods.

The rubber may be placed in a lagged box of suitable shape, or if a molded piece is concerned, the mold can often be used as an electrode. Sheets or strips can be wound on a metal drum with some textile or similar separator between layers and an outer wrapping of metal foil to form, with the drum, an annual condenser. Here again, the rubber acts as dielectric, and it is vulcanized by a relatively short application of high frequency charge.

Another application of the annual condenser arrangement is in the vulcanization of the covering of cylindrical metal objects. The metal core is heated to approximately 250° F. by the application of high or low frequency electromagnetic induction for a few minutes. The covering composition is then applied, with a thin sheet outer electrode, and a high frequency electrostatic field is maintained for 30 or 40 minutes. The new method is said to extend the applications of rapid-cooking mixtures with improved mechanical and aging qualities.

Rubber-Plated Laboratory Supports

A NEW LINE of laboratory supports, the structures of which are entirely of steel, welded at all unions and completely covered with rubber, has been introduced by E. H. Sargent and Company, of Chicago. A variety of supports has been made available for



One of the Sargent rubber-covered supports.

practically all laboratory ware including flasks, funnels, beakers, test tubes, etc. All of the supports have four rubber-cushioned feet over which rubber plating has been deposited by an electroplating process. A compound, both waterproof and inert to concentrated acids and alkalis, is used. Rubber plating of these supports considerably reduces breakage of glassware in the laboratory. They do not absorb or retain any contaminating material, according to the manufacturer, and may be easily washed and as easily sterilized by boiling in water. All of the rubber plating is of black color and medium gloss finish. The plating serves another purpose, also, in that it strengthens the rigid steel structure of the supports thus increasing their useful life.

Salpa Leather-Latex Material

MARKETED under the name of Salpa, a new leather-latex material being produced by Salpa Francais, 55 Rue Amsterdam, Paris, France, is described in the February, 1936, issue of the Bulletin of the Rubber Growers' Association. The material contains a high proportion of rubber, the process utilizing new leather cuttings which are reduced into their constituent fibers. The tanning materials and effects are removed in order to re-tan the leather in the fibers themselves, producing a uniformly tanned leather, the fibers subsequently being combined with latex. Supplied in 12 different grains and 24 colors, the Salpa material can be submitted to the same processes as leather, that is graining, finishing, etc. It is also said to sew, skive, pare, etc., as well as leather.

Report of A.S.T.M. Committee D-11

Several Specification Changes Receive Consideration; Five Papers Scheduled for Symposium at Annual Meeting

AT a meeting of Committee D-11 on Rubber Products of the American Society for Testing Materials, held in Pittsburgh early in March, the various sub-committees presented detailed reports of their activities and offered suggestions for several changes in test specifications which were acted upon by the committee. In addition, plans were completed for the presentation of five technical papers at the annual meeting of the Society to be held in Atlantic City from June 29 to July 3. The papers will comprise a symposium on the subject of "The Relations Between Laboratory Evaluation and Service Life of Rubber Products" and will cover tires, footwear, automotive parts, hose and belts, insulated wire and cable.

Specifications and Methods Reviewed

During the Pittsburgh meeting, held during A.S.T.M. Committee Week, March 2 to 6, the specifications and test methods under the jurisdiction of the committee, which were recently published in a special volume of "A.S.T.M. Standards on Rubber Products," were thoroughly reviewed and some changes were decided upon. In the Standard Methods of Chemical Analysis of Rubber Products (D 297-32) the short procedure is to be brought into conformity with the long test procedure and other revisions will affect the determinations of total sulfur and carbon as well as the analysis of hard rubber.

In the Tentative Methods of Tension Testing of Vulcanized Rubber (D 412-35 T) instructions for calibration of testing machines will be included and, also, the number of required test specimens will be reduced in cases of inspection tests where minimum values have been established. Several revisions were approved in the Tentative Methods of Test for Accelerated Aging of Vulcanized Rubber (D 428-35 T). It was decided to amplify the present Tentative Method of Test for Compression Set of Vulcanized Rubber (D 395-34 T) which involves the use of constant load by adding an alternative method using constant distortion and also to provide for use of cylindrical instead of rectangular test specimens.

The committee has been making an extensive study of a method for testing the effect on rubber compounds of air at elevated pressure and temperature. This test, which is commonly known as the air bomb aging test, is assuming increasing importance for service evaluation of rubber compounds designed to resist heat and oxidation. It is particularly applicable and widely used for such products as inner tubes for truck tire service.

The results of a survey of the use that is being made of the test at the present time were presented. These reports, which were received from 22 laboratories, showed that this test was being employed in various forms by 18 of the laboratories. Because of the obvious importance of this method, it was decided to proceed at once with the preparation of a standardized procedure covering present practice and at the same time to initiate a program for extensive investigation of the test looking toward improvement and further standardization of the method.

Another survey was reported covering the use of the existing Standard Specifications for Rubber Gloves for Electrical Workers on Apparatus or Circuits Not Exceeding 3000 volts to Ground (D 120-23). As a result of this survey, some suggested changes have been taken under consideration.

Results were reported to the committee of an extensive cooperative test program on insulating tapes in which it was found that the testing methods for rubber tape apparently give results that are more indicative than do corresponding tests for friction tape. In consequence, further study will be made of the latter.

Consideration has been given by the committee during the year to ways and means of securing better standard rubber specimens, having certified and tested properties for use as a reference base in methods of testing rubber products. Results were reported to the committee of studies that have been made in connection with the development of such reference standard rubber samples for test purposes. These data were obtained in a single laboratory and give much encouragement to the project. It was decided to continue the work extending the program to include several laboratories.

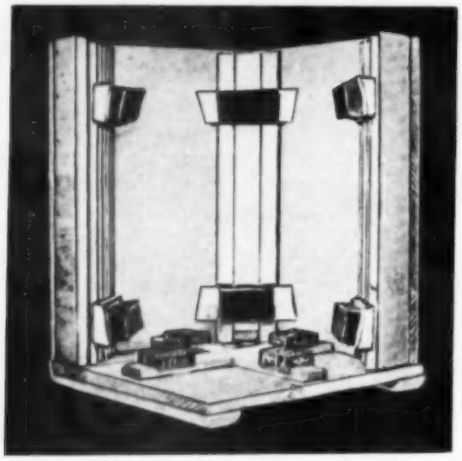
The sub-committee on insulated wire and cable decided to reorganize so as to carry on its work through two main sections in order to improve its effectiveness. To this end, the present sections on insulation resistant to acid, alkali and oil; corona-resistant rubber; saturants and finishes; and 60 per cent rubber sheath compound, were dissolved and replaced by new sections on (1) materials specifications and (2) test methods.

Test Changes Are Contemplated

Section 1 is to proceed at once to a consideration of revisions of the three existing Tentative Specifications for Insulated Wire and Cable: Class AO, 30 per cent Hevea Rubber Compound (D 27-35 T); Class A, 30 per cent Hevea Rubber Compound (D 393-34 T); and Performance Rubber Compound (D 353-35 T); and of development of new specifications covering tough jacket compounds and possibly heat-resisting insulation. Section (2) will devote its attention at present to methods of test for high-voltage compounds, for moisture absorption and for thickness measurement of rubber and braid insulation. The sub-committee also decided to reconsider the present limitation to 5000 volts of Table IV on Thickness of Insulation and Alternating Test Voltage in the Specifications D 27-35 T. Suggested changes will be presented at the next meeting.

Rubber-Cushioned Carboys

ONE of the most difficult packaging problems has been the suspension of a 12- or 13-gallon bottle of acid, or other liquid, in a wooden box that will withstand the abuses of transportation. Almost every



manufacturer uses some type of cushioning of his own design in this connection, but the problem is so keen that the Interstate Commerce Commission, having determined on no standard construction of cushioning members, has devised certain so-called swing tests which all boxed carboys must pass before they will be accepted in interstate trade as a shipping container for certain corrosive liquids.

A solution to this problem is believed found in a carboy devised by Richard D. Lahey and Harry A. Kast, of the American Cyanamid and Chemical Company, which makes use of 8 rubber blocks to each box, and on which patents have been granted. Two rubber blocks are mounted on each of four cushion frames, one frame being inserted in each corner of the carboy. Cork blocks are used on the bottom cushion on which the bottle rests. Shims are driven down grooves provided between the cushion frames and corner posts, securing the bottle in such manner that it presses against all eight of the rubber blocks. Method of application is simple: bottom cushions are first inserted, then two adjacent corner cushion frames are inserted and the bottle slid into the carboy, after which the two remaining cushion frames are inserted and shims driven down the grooves.

According to the patent, which has been assigned to American Cyanamid, it has been determined that unvulcanized, reclaimed rubber is best suited for the manufacture of the cushion blocks used in this instance. The rubber may be cast into blocks of the desired shape or size or the block may be built up from sheets into a laminated structure, the former proving more effective since there is no tendency for the laminations to separate. Tests have indicated that packed carboys using these rubber blocks have withstood the I.C.C. swing test of 55 inches at temperatures ranging from 0° F. to 100° F.

DuPrene-Containing Varnish

SAID to be especially suitable for rubber toys and balls, a new type of varnish containing DuPrene has been evolved by M. Blinkov, a Russian chemist. Claims made for the varnish include a strong adherence to rubber surfaces, high elasticity, acid resistance, odorless and tasteless, resistance to alkalis and water, and remains unchanged at temperatures ranging from less than 10° to over 40° C.

The varnish is made by mixing DuPrene with zinc oxide or benzidine and various mineral or organic pigments in a cylindrical apparatus, the resulting mixture being cut up into small pieces and turpentine added. The mixture swells up for 10 to 12 hours and then dissolves in 2 or 3 hours more, the remaining solution containing 2% of DuPrene. It is said to dry at 18° to 20° after 8 to 10 hours at 60° C.

New Carbon Black Process

A METHOD describing a new process whereby carbon black is produced from hydrocarbon gases, such as methane or propane-butane, by thermal decomposition of these gases in a heated tube, is explained by L. M. Pidgeon, chemist, National Research Laboratories, in the December, 1935, issue of the *Canadian Journal of Research*. Mr. Pidgeon, who has conducted a series of experiments for several years, states that the essential feature of the new process is the use of a porous refractory tube through which a certain amount of inert gas is allowed to pass, the reacting gas being unable to touch the walls of the system, by this means, the deposition of carbon thereby being prevented.

From a 70-30 propane-butane mixture, yields as high as 60% of the carbon in the gas have been obtained, corresponding to 65 lbs. per thousand cubic feet, while 19 lbs. have been secured from methane. The carbon black produced by this process is similar to the "soft" blacks in that it has a high density, low sorptive power, accelerates the cure in a rubber stock, and gives similar resistance to aging and abrasion. It imparts greater stiffness to a rubber stock, however, and in many characteristics fills a niche between the channel and "soft" blacks.

In appearance, the new blacks are similar to the thermatomic type. They do not show the intense black color characteristic of a product of the flame impingement process. They are much more dense and may be readily handled without loss by dusting. The tinting strength is lower than that of the channel blacks, as is also the oil absorption. They do not absorb appreciable amounts of dyes, methylene blue being used in the experiments, while their sorptive power (of methane blacks) is similar to that shown by Thermax. Propane blacks showed higher sorptive power, while blacks made from the mixture of hydrogen and methane showed a sorptive power comparable with that of the channel blacks.

Rubber tests for tensile strength were carried out with satisfactory results reported.

Removing Sulfur Bloom

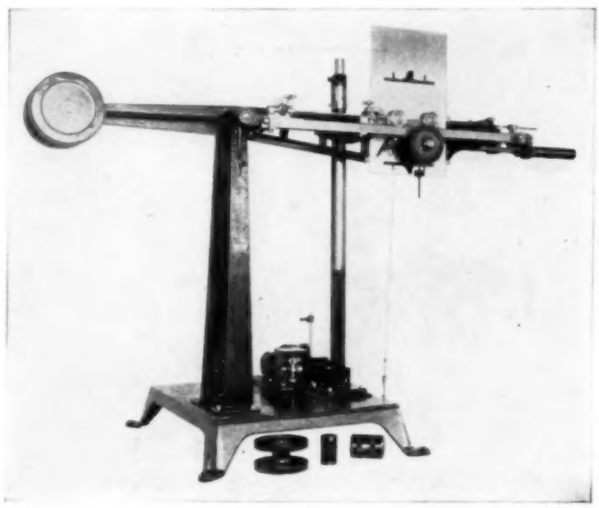
MODERN rubber compounding practice in general utilizes sulfur in such small quantities that, as a rule, sulfur bloom is not frequently encountered. In the past, when it was desired to remove this sulfur bloom, goods were boiled in caustic soda or potash, or soda ash. These are strong chemicals that are likely to produce bad aging effects. Sodium Sulfite, which is now being used in a number of laboratories for the determination of free sulfur in rubber goods, may be used commercially for removing sulfur bloom to better advantage than the caustic chemicals which have been used hitherto. —*R. R. Olin Laboratories.*

New Equipment

Scott I-P Testing Machines

A LINE OF testing machines based on the Incline Plane principle has just been developed by the Henry L. Scott Company, of Providence, Rhode Island. There are four models now available, with a fifth soon to be introduced. The principle used in these models is said to practically eliminate all objectionable operating conditions and all questions of influence on the apparent strength of elongation results due to varying specimen length or elongation values by applying to the specimen itself a definite amount of load per unit of time, regardless of whether the test sample is long or short, elastic or rigid, ductile or plastic. Technicians agree that the more accurate method of testing either of fatigue, tensile, elongation, or other pulling tests is by applying load to the specimen at a constant and uniform rate.

The Incline Plane Testing Machine illustrated herewith (Model I-P-3) is especially suited for tensile,



Scott Incline Plane Model I-P-3

elongation, hysteresis or fatigue, or repeated loadings and unloadings of rubber thread, single ends of textile yarns, and other materials requiring a machine capacity of 20 pounds or less. It is of four capacities: 500 grams, 1000 grams, 10 pounds and 20 pounds, and is about 4 feet high. It gives correct data not only of tensile strength and elongation, but also fatigues at any predetermined load, for any number of repeats. A record of permanent loss, stretch, fatigue and ultimate tensile strength and total elongation in percentage can be also graphically recorded on a rectilinear coordinate ruled chart which may be filed for future reference.

Another model (I-P-4) is especially suited for tensile and elongation tests of tire cord and other materials requiring a machine capacity of 50 pounds or less. It is of the motor-driven, autographic recording type. Other models lend themselves to meet the conditions of the so-called "Nature Test of Silk" and the research testing of fine yarns, rayon, silk, microscopic wires and similar materials.

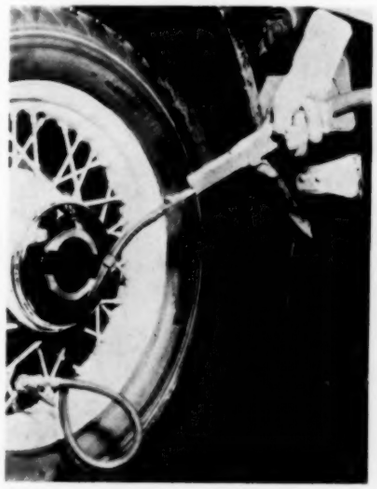
Gorton Pantograph Machines

TWO sizes of 3-dimensional machines have been added to the line of Pantograph machines for engraving and die and mold cutting manufactured by the George Gorton Machine Company, of Racine, Wis-

consin. These new models are adapted for cutting all kinds of dies and molds having ornamental designs, lettering, etc., including small rubber molds. They supplement Gorton's regular duplicator line by reproducing direct from any shape or contour in reduced ratio which makes possible the production of dies in almost any desired size from one working model. The design of the new type eliminates the need for a counterweight to balance the pantograph thus maintaining uniform pressure of the tracer against the model at all pantograph positions. The models are furnished complete with motor mounted and ready for operation. The illustration shows a model being reproduced on the type 3-L machine.

Schrader Chuck Gauge

TIRE inflation with chuck gauges is made more comfortable with the newly-designed No. 1070 Schrader Chuck Gauge just introduced by the A.



Schrader's Son division of the Scovill Manufacturing Company, Brooklyn, N. Y. The new gauge provides

"finger-tip-control" and makes for faster, accurate air service, the trigger alone regulating inflation, testing and deflation. The operator may stand erect with this gauge with the chuck clipped to the tire valve system. It also permits the operator to detect any unusual loss of air first, and then correct the cause before a roadside delay occurs.

Strauss Foot Guard

MADE from either duraluminum or steel, a new foot guard has been introduced by the Strauss Company, Inc., of Pittsburgh, Penna. It weighs 7 ounces in duraluminum, 14 ounces in steel, and is suitable for use where weights of not more than 40 pounds are liable to be dropped. This foot guard is made with two clasp springs which hold it firmly in place on the worker's shoe. It grips the shoe beneath the instep and can be easily applied in ten seconds. A light spring over the shoe toe holds the guard off the floor, the spring compressing when struck by a weight thus allowing the guard to rest on the ground. The Strauss Foot Guard is available in styles to fit No. 5 to No. 12 shoes.

Pyro Optical Pyrometer

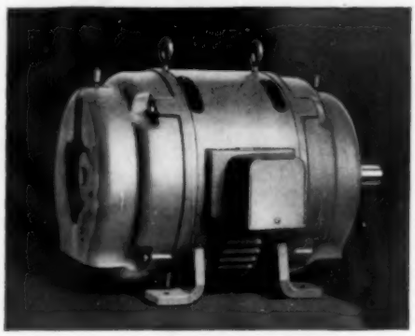
DIFFERING from other types of pyrometers, the Pyrometer Instrument Company, of New York City, has introduced the Pyro Optical Pyrometer. The new instrument is a totally self-contained, direct reading instrument without any correction charts or curves to consult. By means of a concentrated test mark, the user can measure the temperature of minute spots, fast moving objects, or of the smallest streams. A master lamp, aside from two service lamps, is furnished with each instrument for self-recalibration. A special tripod with heavy iron base is available with this pyrometer for laboratory

The self-contained optical pryometer

use, as is a second dummy eyepiece for protection where continuous tests must be made. It can be furnished with various scale ranges to meet all factory and laboratory requirements, according to the manufacturer.

Imperial Splash-Proof Motors

A NEW LINE of splash-proof, squirrel-cage motors in all ratings from ½ to 200 h.p. for constant and multi-speed, continuous or intermittent duty in all voltages and cycles, and for any torque and



starting current, has been announced by the Imperial Electric Company, Akron, Ohio. The construction of the motors, one of which is illustrated herewith, provides protection to the inner parts from splash or spray and still permits proper ventilation by small openings in the bottom of the end brackets for the air in-take and louvres in the frame cover underneath the motor for the air exit.

Bonney Hand Cutting Knife

FOR use on various hand cutting operations the Bonney Forge and Tool Works, Allentown, Pennsylvania has placed on the market a new type of shop knife which has six blades contained in the

handle, each of them suitable for some particular job. Among its many uses, this knife can be utilized for cutting automobile and running-board mats, top material, kickboards, hose, belting and other rubber products. It can also be used as a scraper when the blade is placed crosswise in the handle. The new Bonney shop knife is unusually strong, light and yet perfectly balanced, according to its manufacturer.

Adhesion of Lacquer to Rubber

DIFFICULTY in securing adhesion to rubber with quick-drying lacquers is said to be overcome by employing an intermediate coating of rubber or latex in admixture with certain partly polymerized organic compounds. Softening agents may also be added. Some of the polymerized compounds suitable for this purpose are polyacrylic acid and polymethacrylic acid (or their esters, amides, anhydrides, etc.). The rubber to be treated is dipped in a suitable aqueous emulsion of the latex and other compounds and on drying is ready for the finishing coat of lacquer. The process was devised by W. M. Munzinger, of Heidelberg-Rohrbach, Germany, and is covered by English Patent 422,670.

Controlling Costs and Operation of Business Automobiles. Distributed by the Policyholders Service Bureau, Metropolitan Life Insurance Company, 1 Madison Avenue, New York City. 34 pp.

This latest report of the insurance company treats with the problem of establishing effective control of the operations and expenses of automobiles used on company business. It presents the findings of a survey of practices of 53 companies engaged in a variety of enterprises. Questions considered include: Should the company or the employee own the car? In what form should reimbursement for expenses be made? What are some policies relative to financing new cars, insurance, trade-ins, personal use, etc.? Methods of handling these problems are discussed.

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A.S.T.M. Proceedings (1935). In Two Parts. Published by the American Society for Testing Materials, 260 South Broad Street, Philadelphia, Penna. $5.50 each.

Part One of these proceedings contains reports from 40 standing committees and includes 136 tentative specifications either newly published or revised in 1935. A detailed report of Committee D-11 on Rubber Products appears. Part Two is devoted to the 37 technical papers presented at the 1935 annual meeting plus approximately 150 pages of discussion. Several symposiums are included in this section, which runs to 769 pages.

•

Goodrich Redbook. Prepared and issued by the B. F. Goodrich Company, Akron, Ohio. 64 pp.

This catalog of products and sales helps for the tire, battery and accessory dealer, besides acting as a sales guide, serves to indicate how diversified has become the business of the tire dealer. It contains illustrations and brief descriptions of the dozens of accessory items supplied by Goodrich for the automotive trade and is attractively printed in color. In addition to describing its products, the catalog contains a list of sales helps available through Goodrich to the dealer.

•

Behavior of the Automobile Industry in Depression. By John W. Scoville. Distributed by the Chrysler Corporation, Detroit, Michigan. 31 pp.

This booklet contains a reproduction of the address the author, chief statistician of the Chrysler Corporation, delivered last December before members of the Econometric Society in New York City. It is an interesting insight to the reactions of the automobile industry to each economic difficulty during the past several years including the closing of the banks by Government decree, increased unemployment, etc. A series of charts and graphs depicts the sales and manufacturing trends of the period from 1928 to 1935.

•

Thiokol Facts. Published by the Thiokol Corporation, Yardville, N. J. 4 pp.

Dated April, 1936, this is the first issue of a new house organ to be published regularly by Thiokol. This issue is devoted to telling the story and the general application of Thiokol. Although only four pages in size, it contains several interesting illustrations all of which were printed with plates made of synthetic rubber. *Thiokol Facts* is to be published monthly.

•

Thwing's Paper Tester. Issued by Thwing-Albert Instrument Company, Philadelphia, Penna. 4 pp.

To be published every other month, this is the first issue of a new house organ devoted to paper and paper products. It contains a discussion on the technique of checking on basis weight of paper. Subsequent issues will deal with additional topics on the manufacture and testing of paper and paper products. Authorities will contribute to the series.

REVIEW SHELF

• Monthly Review of New Books, Pamphlets, Company Catalogs, Service Bulletins, House Organs, etc., Pertinent to the Industry

Gastex—the Design, the Process, the Product. Issued by the General Atlas Carbon Company, 60 Wall Street, New York City. Spiral binding. 20 pp.

In answer to many requests for more details on how Gastex carbon black is made, the manufacturers have brought out this attractive spirally-bound booklet. In clear terms it tells how this black was originated, its method of manufacture, and the manifold uses to which it is put in the rubber industry. The booklet is illustrated with four-color diagrams showing, for the first time, every step in the manufacture, from the admission of the natural gas into the furnace where Gastex is formed by incomplete combustion, to the removal of the carbon particles from the gases by the creation of an electric field in which the suspended particles are agglomerated, to the automatic vibrators which cause the particles to drop into a precipitator, from which a pneumatic conveyor carries the material to a vibrating screen to remove any foreign matter, and finally to the packing machine where it is packed in double wallpaper bags ready for shipment. This booklet should prove of interest and value to every rubber chemist and technologist.

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Labor's Enemy No. 1—The 30-Hour Week. By Allen W. Rucker in collaboration with N. W. Pickering. Issued by the Farrel-Birmingham Co., Inc., Ansonia, Conn. 8 pp.

In this, the 15th in the series of booklet-editorials by the co-authors, the dangers of the 30-hour industrial week are graphically depicted. How the annual income of workers is determined by the combined action of the value of the unit of output, the number of units produced per hour, and the number of hours worked per year is explained. The authors claim that dividing the man-hours of labor is not the solution to the unemployment problem, and urge that a way be found to increase them instead.

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1936 Year Book. Published by the Tire and Rim Association, Inc., 1401 Guarantee Title Building, Cleveland, Ohio. 86 pp. $2.00.

Revised standards, recommended practices and experimental practices are contained in this latest year book of the Association covering passenger car, truck and bus, motorcycle, airplane, agricultural, solid and cushion tires. Tires, wheels, valves and fittings are covered. Fourteen tire manufacturers are members of the Association.

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National Asbestos Wires and Cables. Issued by the National Electric Products Corporation, Pittsburgh, Penna. 14 pp.

Specifications for the varied line of wires and cables made by National Electric Products are contained in this catalog. The various strands used to make up the finished products are graphically depicted in several illustrations. The detailed specification tables are helpful in selecting the proper wire or cable for any particular application.

Editorial Comment

Simplified Taxation?

WHEN President Roosevelt first announced his plan to supersede all current corporation taxes with a single tax on undistributed profits he intended it to affect "great simplification in tax procedure, corporate financing, etc." In the form in which it emerged from the Treasury Department and was submitted to Congress the new tax plan was simple, easily understood and readily applicable. Its sum and substance was this: there was to be a 33⅓ per cent tax on undistributed profits. But since its announcement the plan has entered a labyrinth of entanglements and has become a maze of complexity.

Rubber manufacturers, as well as all manufacturers with corporate set-ups, should be vitally interested in this proposed tax plan. More than twenty variations are under consideration by Congress including the change from a flat to a graduated tax, from a tax on undistributed profits to one on net income, special treatment to domestic and foreign corporations, etc. Every type of corporation, whether its stock lies in the hands of thousands or of a few individuals, will be financially affected.

It is instantly apparent from a reading of the Treasury's report, that the Administration is guessing when it states that the new tax would yield $591,000,000 in extra revenue. How can the Treasury foretell what action corporation directors will take as, if and when the new tax proposal is approved? Tax yields under the new set-up would depend not only on corporation earnings but on what dividend policy the corporation directors chose. Only hasty conclusions insist that directors will disperse profits liberally in the form of extra dividends to reduce corporation tax payments. Can a going organization disperse with its surplus merely to avoid tax obligations? The answer is obvious. What would have happened to companies, stockholders, wage earners, and even the Government itself, if surpluses had not existed in the last six or seven years?

Under its present terms, the tax proposal provides for a payment on 70 per cent of earnings per annum. This places corporation directors in a difficult position. If they protest the tax there is a strong possibility that the Congressional Committee investigating it may decide on a heavier flat tax on corporation profits than the present one, a possibility to be avoided. If they make no protest and the tax goes through under its present terms then they are obliged to gamble with a fluctuating policy as regards distribution of profits, with the necessity of maintaining a surplus, like Damocles' sword, hovering over their heads.

Commendable Criticism

EVERY member of the rubber industry, concerned with either production or sales, should read Mr. John Bierer's article on the complex character of the industry, which appears in this issue, with keen interest. Mr. Bierer is one of the few members of the industry who have earned the right to both criticize and commend its actions and reactions. For more than twenty-five years he has been in the midst of things, both technical and from a production standpoint. He has watched and participated, and speaks with unquestioned authority.

Mr. Bierer terms the industry one with a "Dr. Jekyll and Mr. Hyde" complex. He calls the technologists who have contributed to the art of making rubber products more economical and practical, Dr. Jekyll. The price-cutter, the merchandiser who issues unconditional guaranties and engages in other merchandising fancies, he collectively calls Mr. Hyde. The stockholder, who really employs both, is painted as the real victim of Mr. Hyde's activities when he should be the recipient of Dr. Jekyll's research via profits on his investment.

For years price cutting and the practice of extending ridiculous guaranties have been existent in the rubber industry. The peculiar part of it is, as Mr. Bierer so plainly points out, that the consumers of mass rubber products are not responsible for these evils, they were introduced by members of the industry themselves. The author describes it as the result of "a peculiar philosophy which has affected the high management of a number of rubber companies—large and small—which has given free rein to Mr. Hyde and his wasteful tactics." There is, and can be, no better explanation of this sales phenomena than that of "a peculiar philosophy."

In concluding his article, Mr. Bierer asks how long Mr. Hyde will be permitted to run rampant in the industry. There now exists a fair possibility that his actions will soon be considerably retarded. That his activities can be eliminated seems to be evident in the past six months. As a result of an agreement among tire manufacturers last November, the tire industry is now going through one of the longest periods of price stability ever experienced. More than that, increased prices are in the offing. What can be accomplished by the tire makers can surely be accomplished in the field of mechanical rubber goods, footwear, etc. Perhaps the stockholder investing in a rubber manufacturing corporation will yet see his investment bring the desired returns. Mr. Hyde's exile from the industry would be welcomed by all.

CURRENT • NEWS of the Rubber Industry

APRIL, 1936

DEALERS FILE CHARGE ON UNFAIR PRACTICES

Federal Trade Commission Is Asked to Issue a Complaint Against 53 Tire Manufacturers Together with Orders to Remedy the Cited Evils.

In a determined attack against confusion of tire brands and misleading advertising, the recently reorganized National Association of Independent Tire Dealers, Inc., of which George Burger is general manager, has filed a petition with the Federal Trade Commission charging 53 concerns, consisting of tire manufacturers, their affiliates and subsidiaries, with violation of Section 5 of the FTC Act. The petition specifically makes five recommendations and asks that a complaint be issued against the tire manufacturers named, together with orders to remedy the evils and abuses cited.

Five Recommendations Are Made

A long tirade against the confusion resulting from multiplication of tire brands and the lack of quality designation in association with brand names is contained in the complaint, the five specific recommendations made to remove this situation being as follows:

(1) Tire manufacturers to be ordered to desist from the present practice of using only trade names on the sidewall of tires unless the quality is designated. (The petition terms this practice "meaningless and deceptive.")

(2) Each tire to be branded on both sidewalls in place of or in addition to trade names, as prominently as the name of the manufacturer and in as large letters as any other lettering on the tire, whether it is "first line," "second line," etc.

(3) Each special brand tire should be branded on both sidewalls in accordance with the nearest corresponding "line" of tire produced by the particular manufacturer concerned.

(4) All tire wrappings and labels should be properly marked to indicate to the public what tire "line" is being offered for sale.

(5) Every advertisement or representation, either written or oral, should make known to the consumer the "line" of tire being offered for sale.

The present confusion in the dealer business, according to the petition, was brought about by the wide diversification in the type of selling outlets for tires and attempts of the manufacturers to produce tire "lines" in order to sell every possible type of outlet. It further states that this multiplication of "lines" was accompanied by the general practice of special names and combinations of names to designate the different "lines." Conditions were still further complicated, the petitioner continues, by the manufacturers' custom of producing tires for sale through subsidiary sales companies under a different corporate trade style and brand name, a custom adopted by practically every one of the larger tire makers.

Over and above all of these practices the confusion is still further heightened, according to the Association, by the free use of the terms "Firsts" and "Seconds," which do not indicate "lines" but are used to distinguish between tires guaranteed as to service and blemished tires. Either term may be applied to any "line" tire and tends to cause unfair and deceptive advertising. The petition also complains that secondary names and accessory brandings, molded into tire sidewalls, fail to guide the consumer to an understanding of the relative "line" or grade he is purchasing.

Petition Sums Up Situation

A summation of the complaint which appears at the end of the petition follows:

"First, there is present the situation where the layman has no intelligible standards by which to be guided in purchasing a tire, and that the absence of intelligible standards affords the means of perpetrating a fraud upon the buying public. . . . Secondly, even though the buyer is aware of the meaning of the various brand markings used and understands their import, yet this situation might be just as deceptive, for the brand markings are not a true index of value but tend to deceive in respect to the quality and service of the tire."

Rubber Division Meets

As this issue appears the Rubber Division, A. C. S., is holding its Spring meeting at Kansas City at which five papers will be presented, abstracts of which appeared in our last number. The May issue of THE RUBBER AGE will carry full details of the Kansas City meeting.

FLOOD TAKES TOLL IN RUBBER INDUSTRY

Factories in New England Report Considerable Damage to Property with Untold Losses Accumulating Because of Deterred Production.

The recent floods which shocked the nation and resulted in hundreds of lives lost and millions of dollars in property damage took its toll in the rubber industry. While complete reports are still not available from many sections of the flooded areas a survey made by correspondents of THE RUBBER AGE reveals the following:

Considerable loss and damage is reported by rubber manufacturers and companies associated with the rubber industry in Southern New England. Loss was accrued not only in actual damage to buildings and equipment, but also in the slackening of production schedules due to lack of power and other causes traceable to the floods.

Production Operations Suspended

Plants of United States Rubber Products, Inc., in Naugatuck, Conn., were shut down when waters of the Naugatuck River flooded the boiler room. In nearby Seymour water got into the rubber mill of the H. P. & E. Day Company, manufacturer of fountain pens and hard rubber specialties, to a depth of two feet on the first floor. The boiler room was filled and two motors were inundated. R. D. Scott, an executive, said that the actual damage was not extensive.

Operations of Farrel-Birmingham, Inc., Ansonia, Conn., builder of rubber mill machinery, were largely suspended for a time as a result of the flood. There was a foot and a half of water in the roll department and electric power was cut off.

Kerite Insulated Wire & Cable Company, Seymour, has been operating on an overtime basis to meet the sudden demand for cables to replace those lost in the flood areas and submerged at substations and power houses. Manager C. L. Smith said the overtime basis might continue for some time, as cable orders were heavy. Other wire and cable manufacturers are feeling the same demand.

The Naugatuck footwear plants shipped more than 12,000 pairs of boots to flood districts throughout the East, and U. S. Rubber donated 1,500 pairs for use in the stricken Hartford area.

Plant employees contributed about $350 to the Red Cross for flood relief work.

With 10 feet of water on the property and five-and-a-half feet on the main floor of the plant and office, National Sherardizing & Machine Company, Hartford, Conn., suffered heavy loss, according to Wesley I. Charter, president and treasurer. Until further check could be made, Mr. Charter would not hazard an estimate as to the amount. All supplies and many valuable office records were lost, although the personnel was able to dry out some of the latter.

The National plant, which produces mandrels and other equipment for the rubber industry, has resumed operations and Mr. Charter is confident that "things will be humming again" soon. "We've had a first-class housecleaning, anyhow," he told THE RUBBER AGE.

Reports from Middletown, Conn., indicate that the plant of the Middletown Rubber Corp., operating the business of the former Omo Mfg. Company, sustained some flood damage, but the amount could not be ascertained.

From Western Massachusetts comes reports of severe flood damage to at least five plants engaged in the manufacture of rubber goods and rubber mill machinery. Loss of stock and equipment suffered by the Athol Mfg. Company, Athol, will amount to at least $50,000 and may reach the $100,000 mark when checking is completed.

The basement and first floor of the plant of Premoid Products, Inc., West Springfield, were flooded by the Connecticut River with heavy loss, but no estimate of the amount had been made. The factory of B. F. Perkins & Sons, Inc., Willimansett, makers of embossing rolls, gauges, etc., was also flooded, with considerable damage.

Loss in stock and equipment of A. G. Spalding & Company, Chicopee, is estimated at about $100,000, while similar damage at the affiliated plant of the Wright-Ditson-Victor Company will run between $25,000 and $50,000. Easthampton Rubber Thread Company, Easthampton, reported no damage.

Predicts Longer Tire Life

In a pamphlet termed "Change Rules the Rails," Dr. C. M. A. Stine, vice-president of E. I. du Pont de Nemours and Company, Inc., makes the prediction that pending developments "may double or even treble the life of motor-truck tires." Stating that scientific research can help railroading, Dr. Stine cites the rubber industry as an example of what may be accomplished by research, dwelling in particular on the development of DuPrene which he terms "a definite barrier against any future anti-American rubber monopoly." Referring to the automobile industry, he states that the chief parts of the automobile that do not wear with the car throughout its life are the rubber parts, and points out that the chemist is fast improving this condition with the object of producing a car "in which no part will wear out until the car is scrapped."

Rubber's Diamond Jubilee

Although the story of rubber goes back four centuries the year 1936 marks its Diamond Jubilee since it was in 1876 that Sir Henry Wickham brought a quantity of seeds from the banks of the Amazon to Kew Gardens, in London, the birth of plantation rubber. Of the total number of seeds Sir Wickham transported from Brazil, only 4 per cent germinated, but these were sufficient to distribute through the Far East and found the beginnings of a great industry.

SAFETY SECTION SETS TENTATIVE PROGRAM

The Rubber Section of the National Safety Council, of which A. M. Dietz of the Pennsylvania Rubber Company, Jeannette, Pennsylvania, is general chairman, has arranged a tentative program for its two-day session on October 6 and 7 to be held in conjunction with the 25th Annual Safety Congress at Atlantic City the week of October 5 to 9.

In addition to a resume of sectional activities and presentation of National Safety Council trophies, three papers have been scheduled for the Tuesday morning session: *Safe Solvents,* by Ralph Farnum, safety supervisor, U. S. Rubber Products, Detroit; *How to Reach the Individual Worker on Safety,* by Urban L. Moler, Inland Div., General Motors Corp., Dayton; and *Do We Have Occupational Disease Hazards?,* by a speaker from the Haskell Laboratory of Industrial Toxicology, Wilmington, Delaware.

On Wednesday morning, three additional papers will be presented: *Training of Transferred and New Employees on Safety,* by A. A. Nicholson, The Texas Co., New York City; *Tie-Up Between Safety and Motion Study,* by Allan H. Mogensen; and *Mental Causes of Accidents,* by Boyd Fisher, R. H. Macy & Co., New York City. Officers for the 1936-37 season will be elected at this session, while an Executive Committee meeting is scheduled for later in the afternoon.

All members of the Rubber Section have been asked to submit one of their mill knives to be used toward approving a standard safety-type knife.

ESSEX RUBBER CO. TO BE REORGANIZED

A plan of reorganization for the Essex Rubber Company, of Trenton, N. J., has been filed in the United States District Court. The company has been under the supervision of Harold S. Maddock, as equity receiver, since July, 1931. Mr. Maddock also occupies the same post in the Vulcan Recovery Company, an Essex subsidiary, which reclaims rubber for use by the parent company. Mr. Maddock and Joseph F. O'Shaughnessy, president of Essex, were recently appointed temporary trustees of the company.

An order to show cause why the temporary trustees should not be made permanent trustees and why the reorganization plan submitted by stockholders should not be approved has been issued by Judge Forman of the United States District Court at Trenton. The plan calls for continuation of present operations financed by a loan already approved by the Reconstruction Finance Corporation. On October 31, 1935, the total net assets of Essex were listed at $955,000 against liabilities of $402,580. No dividends have been paid since January 1, 1929, and under the reorganization plan no dividends would be paid until notes issued to creditors under the reorganization option would be retired.

The plan also offers an option for a settlement to creditors of 40% of their claims in cash or a cash payment of 30% and 40% additional in notes payable in 1945. Essex was established in Trenton in 1907 and entered financial difficulties in 1928.

Ford Plantations Active

Activity on the clearance of acreage for planting rubber trees is proceeding at a rapid pace on both of the two Ford concessions in Brazil operated by the Companhia Ford Industrial de Brazil. The original concession, known as Fordlandia, obtained in 1927, consists of approximately a million hectares (2,400,000 acres). Up to November 30, 1935, the company had cleared 8,500 acres of which 8,100 are planted with about 1,150,000 rubber trees. The second concession, known as Belleterra, was obtained in 1934 from the State of Para in exchange for a similar area in Fordlandia. Belleterra consists of approximately 250,000 hectares (600,000 acres), and up to November 30, 1935, about 3,700 acres had been cleared of which 2,350 acres have been planted with 500,000 rubber trees. The nursery maintained by the company contains 1,500,000 young rubber plants, and 2,000 other allied plants, all of which are to be used for future grafting. American Consul George E. Seltzer, at Para, reports that considerable experimentation is being conducted on the special farms maintained by the Ford interests at both concessions.

Progress in Panama Rubber

Active planting is expected to get under way on the Goodyear Tire and Rubber Company's plantation in the Republic of Panama shortly. Approximately 30,000 seedling trees of the rubber-producing *Hevea brasiliensis,* ranging in height from 3 to 6 feet, are now in Goodyear's nursery at the Canal Zone Experimental Gardens. Governor J. L. Schley, of Panama, recently pointed out that if rubber cultivation is made economically successful it would materially benefit the Republic as well as supply a closer source for the United States.

AMERICAN RUBBER IS URGED BY NEW GROUP

With E. E. Failor as its first secretary, the American Rubber Association has been formed, with headquarters at Alliance, Ohio. Adopting as its slogan "Grow American Rubber," the expressed purpose of the new organization is to sponsor rubber cultivation in "adjacent tropical American regions" where sufficient rainfall and soil conditions lend themselves to such cultivation, modern methods of production being deemed far enough advanced to overcome most of the difficulties experienced in the past.

In announcing its formation the new association attacks restriction schemes from the angle of the American rubber manufacturer, pointing out that although the present scheme "costing us about 10 cents per pound extra" is not serious today, its set-up is such that it "jeopardizes our future trade expansion and builds the ground work to rule our manufacturers out of expanding world markets in favor of European plantation-owning manufacturers."

The Association claims that the European-owned or estate plantations cause "sinful waste" and deprive the native planter—the rightful producer—from his place in the sun. To counteract the so-termed "dangerous situation," the Association urges "an organization equally as powerful, independent and diplomatic." It points out the necessity for "ending this menace to American business for once and always."

In order to secure a staple crude rubber supply, it is the avowed intention of the American Rubber Association to recruit aid from rubber, automobile and accessory manufacturers and from investors, automobile clubs and gasoline dispensers so that rubber technicians, diplomats and organizers may be secured to furnish "every available facility to assist Latin America and other countries to establish native rubber growers."

Resident Production Planned

Since the sole aim of the organization is to secure an economical and dependable rubber supply, it proposes to overcome the disappointing past Latin American experiences in rubber cultivation "by inducing native farmer production, and offering a resident land owner our support instead of the past plans of non-resident production there."

Taking up the question of fostering native rubber cultivation in the Latin American countries, the Association offers the suggestion that benefits to be accrued from such action would be raised to a point "where we could afford to loan them hundreds of millions of dollars to get production started rather than lose this on extra crude costs at present." The benefits to be accrued would cover a strengthened relationship, greater trade reciprocity and general stabilized investments and credits in the Western hemisphere, all of which, according to the Association, would pay better dividends than our European loans.

No permanent officers have as yet been selected for the newly-organized association, according to Mr. Failor.

Ship 5-Ton Rubber Order

The plant of the Ohio Rubber Company at Willoughby, Ohio, was exceptionally busy last month when executives from all departments participated in the preparation of a 5-ton shipment of rubber goods to Russia. The order for this merchandise was placed by the Amtorg Trading Corporation, American business agent for the Soviet. A special car was furnished by the local express office to start the goods on the first step to its destination.

Building Factory in Liberia

On his return to the United States from an extended inspection tour of the Firestone plantations in Liberia, Harvey S. Firestone, Jr., has just revealed that Firestone is erecting a rubber factory in that country at Port Elizabeth. The factory will cost approximately $1,000,000, according to Mr. Firestone.

Receiver for Tyson Bros.

Edward R. McGlynn, Newark lawyer, and Thomas H. Tyson have been named receivers for Tyson Brothers, of Woodbridge, N. J., by Vice Chancellor Malcolm Buchanan, and will continue the business. Tyson Brothers manufacture tire repair materials and rubber substitutes, among other products. In the petition filed with the court it is indicated that the substitute division of the company showed a $3,550 profit in 1935, a loss of $8,233 being reported for the tire repair department.

Adopt Commercial Standard

The National Bureau of Standards has announced that the Commercial Standard for Woven Elastic Fabrics for Use in Overalls proposed last November has been adopted in the absence of any active opposition. The standard will be known as CS58-36 and may be considered effective for new production on May 15. It was officially adopted by the Bureau after receipt of signed acceptances from a number of manufacturers estimated to represent a majority in the field.

LAST MINUTE NEWS

Tire Decentralization Seen

Shortly after the announcement made by the B. F. Goodrich Company that it was contemplating moving part of its production to the East, details of which appear elsewhere in this issue, it was revealed that Goodyear has stepped up production on tires from 6,000 to 8,000 per day in its Gadsden, Alabama, factory, and would begin the manufacture of inner tubes at that plant on June 1. It is also reported that General Tire and Rubber Company is investigating a factory in the south for production purposes. These plans and reports are believed to be the beginning of decentralization of rubber manufacture due to continued labor difficulties at Akron.

Loss for Dominion Rubber

Dominion Rubber Company, Ltd., and subsidiaries, controlled by the U. S. Rubber Company, report a net loss of $11,515 for the year of 1935, after deducting expenses, depreciation, taxes and other charges. In the preceding year Dominion Rubber reported a net income of $36,699, equal to $12.09 a share on 30,000 preferred shares.

Servus Rubber Reports Loss

For the year of 1935, the Servus Rubber Company, Rock Island, Illinois, reports a net loss of $52,919, after expenses and other charges, which compares with a net loss of $23,335 in the preceding year.

Set India Tire Hearing

A hearing on the reorganization plan of the India Tire Company, Mogadore, Ohio, details of which appear elsewhere in this issue, has been set for April 23 in the office of Harry L. Snyder, special referee, 724 Second National Building, Akron. The plan to be discussed by creditors and stockholders calls for an adjusted settlement of the company's debts. Judge West, of the Federal Court, at Cleveland, approved sums for salaries and operating expenses for the company on April 7, pending settlement of the reorganization request.

Toy Fair to Open

The American Toy Fair, largest toy exhibit in the world opens on April 20 at the Hotel McAlpin in New York City. More than 2,500 buyers from all parts of the world are expected according to the Toy Manufacturers of America, sponsors of the annual event. Several rubber manufacturers are scheduled to exhibit their wares at the McAlpin.

James C. Evans Dies

James C. Evans, chief engineer of the Republic Rubber Company, Youngstown, Ohio, died on April 4 after being stricken with a heart attack while driving earlier in the day. He was 40 years old. A life-long resident of Youngstown, Mr. Evans had been associated with Republic Rubber for a number of years. He leaves a mother, widow, two sons and a brother.

GOODYEAR PLANTS HUM AS LONG STRIKE ENDS

Plants of the Goodyear Tire and Rubber Company at Akron are humming with activity as production schedules interrupted by the 5-week long strike are being rapidly resumed. The strike was settled on March 21 when members of the Goodyear local of the United Rubberworkers of America voted almost unanimously to accept a seven point agreement tendered by Goodyear. The pertinent terms of this agreement follow:

(1) All Goodyear employees as of February 12 shall return to work without discrimination. (2) The management will meet and deal with its employees individually or through duly chosen representatives to negotiate all questions of mutual interest. (3) Notice will be given to employee representatives on wage rate changes before they are posted. (4) A 36-hour week, 6-hour daily shift, will be observed in the tire and tube division, an employee vote to be held on any future changes in hours. (5) In other departments the work week shall not exceed 40 hours nor be less than 30 hours, unless otherwise arranged by employee vote. (6) A 24-hour week shall be worked temporarily in all factory divisions without a vote to avoid lay-offs. (7) Lists of contemplated lay-offs will be issued in duplicate, one copy to be retained by the foreman, the other to be kept in the office of the Labor Department, both being available for inspection by representatives of the employees affected.

Strike Result of "Sit-Downs"

The strike at Goodyear was the result of a series of "sit-down" protests over notice of lay-offs for 60 fourth shift tire builders in Plant 2 on February 14. Although the company later agreed to hold up the lay-offs and rehire 137 men it had discharged because of the "sit-downs," the tire builders decided on February 17 to picket Plants 2 and 3. On February 19 the strike was in full progress and a complete blockade of all plants was effected, which continued until March 21 when a settlement was agreed upon.

It is considered remarkable that no direct violence or destruction of life or property was recorded during the entire siege. Goodyear secured a court order limiting the number of pickets to 10 at each gate, but pickets defied the ruling. The union threatened a general strike in Akron. A non-strikers committee warned that it intended to enter the factory through the picket lines. A Law and Order league was organized by prominent Akron citizens to "drive out the agitators causing the extension of the strike." Similar actions and threats hovered in the air, lending a tense feeling to the situation, but fortunately the settlement was accepted by the union before the outbreak of any actual violence.

In explaining the terms of settlement, Paul W. Litchfield, president of Goodyear, made it plain that the Goodyear Industrial Assembly will occupy the same position it has in the past and that membership in any organization "is not now and will not be a condition of employment at Goodyear."

New Use for Tires?

A Marysville, California, fruit grower put tires to a new use recently. Upper California was subjected to a frost far below zero, threatening to ruin the blossoming fruit crops in the orchards. This enterprising grower purchased 10,000 old automobile tires and burned them in his orchard over a period of days until the extremely cold weather abated. Perhaps scrap rubber dealers may see a new market in the fruit growing industry in the future!

F. B. DAVIS PREDICTS DECREASED ACCIDENTS

There will be fewer automobile accidents in 1936, according to F. B. Davis, Jr., president of the U. S. Rubber Company, who bases his prediction on the continued growth of concentrated and cooperative safety action, "the only possible means of gaining the desired results."

In all, states Mr. Davis, there are three fundamental causes of automobile accidents, viz: the mechanical failure of the car, the driver, and road conditions. Automobile and equipment manufacturers have striven to improve and invent new safety devices to overcome the possibilities of mechanical failure, the tire industry, too, having kept pace with this move by designing tires, such as the new U. S. Royal Master with Centipede Grip, especially intended to avert skidding, one of the leading accident causes.

With reference to the second fundamental cause for accidents—the driver—Mr. Davis firmly believes in the value of education, urging that education should start "when the driver-to-be is a boy or girl in grammar school." In his opinion "90% of the drivers now on the highway are safe drivers."

Regarding roads, the U. S. Rubber executive feels that "highways in this country are generally in good condition. They are being improved each year. They are being made safer each year. But good or bad it is up to the driver to adjust his style of driving and rate of speed to the conditions of the road."

Incorporate Baxter Rubber

Baxter Rubber Company, 163 Mulberry Street, Newark, N. J., has been incorporated at Trenton with 1,000 no-par shares to engage in the manufacture of miscellaneous rubber products. Stockholders include Charles E. Baxter, Sr., Charles E. Baxter, Jr., and Charlotte M. Baxter, all of 9 Orchard Road, Maplewood, N. J.

VALUE OF U. S. EXPORTS INCREASED OVER 1934

United States exports of rubber products increased by 2% in value in 1935 as compared with 1934—from $21,764,143 to $22,147,607—a gain of 35% from the record low figure of $16,364,678 in 1932, according to the February 22nd issue of *Commerce Reports* issued by the Department of Commerce.

It is estimated that the total quantity of rubber goods exported in 1935 declined 9% from the previous year, but prices were 12% higher, this latter percentage accounting for the increased total value of these exports. Comparing exports of rubber products in 1935 by quantity, price and total value, with similar figures for the three preceding years, indicates a favorable net increase in the quantity of such exports, generally higher prices, and greatly increased total values.

A comparison of exports of rubber goods in 1935 with 1934, by general classes, reveals mixed trends, as follows: tires, from $12,293,972 in 1934 to $11,633,990 in 1935, decline of 5.4%; rubber footwear, $682,926 to $871,727, increase of 27.6%; mechanical goods, $2,980,665 to $3,219,436, increase of 8%; rubberized fabrics, $758,897 to $711,727, decline of 6.2%; specialties, $1,288,749 to $1,268,966, decline of 1.5%; semi-manufactured goods, $2,241,288 to $2,456,693, increase of 9.6%; hard rubber goods, $283,073 to $402,093, increase of 42%; and miscellaneous rubber goods, $1,232,236 to $1,583,050, an increase of 28.5%.

Reduce Price of DuPrene

For the second time since the beginning of this year E. I. du Pont de Nemours & Company has reduced the price of DuPrene. Early in the year a 5 cent price reduction from $1.05 to $1.00 a pound was announced, while the second reduction, just announced, brings the price down to 75 cents a pound, or less than five times the price of natural rubber at present market quotations. The new price is F.O.B., Carey's Point, N. J., the site of the factory recently completed for the exclusive manufacture of DuPrene. Increased volume is indicated as the reason for the latest reduction.

Rubber Stocks Decline

Stocks of crude rubber outside the United States and the United Kingdom, showed a further decline in February, according to the monthly report issued by Henry Gardner and Company, London (England) brokerage house. They amounted to 63,137 tons for the month as compared with 69,628 tons in the preceding month. Native stocks in the Netherlands East Indies dropped from 8,050 tons to 4,594, according to the report; in Sarawak, from 1,053 to 450 tons; while slight increases were recorded in North Borneo and Indo-China.

RUBBER GROUP ACTIVITIES

Meetings in March and April Marked by Presentation of Many Interesting Technical Papers Plus Additional Entertainment

R. I. Rubber Club

The meeting of the Rhode Island Rubber Club held on Friday, March 12, at the Narragansett Hotel in Providence brought out 140 members and guests to hear two interesting talks and to learn the details of the club's coming golf tournament for which THE RUBBER AGE has donated two silver cups.

"Experiences in the Rubber Industry During the Past 25 Years" was the scheduled title of the talk by John W. Bierer, factory manager of the Boston Woven Hose and Rubber Company, Cambridge, Mass., but he took his listeners by surprise when he launched into an outspoken criticism of the price cutting evils so prevalent in the industry.

He characterized it as a "Dr. Jekyll and Mr. Hyde industry" which on the one hand goes to considerable trouble and expense to continually improve its products by utilization of the best technical assistance, materials and equipment, and then will nullify all its accomplishments in this respect by selling its products at less than cost, depriving stockholders of their legitimate return on their investment. Not only is this true in the tire field, but in mechanical goods and other rubber products.

Mr. Bierer's extemporaneous talk was so interesting and full of thought-provoking facts that he was prevailed upon by THE RUBBER AGE to prepare it in the form of an article which appears elsewhere in this issue.

The other talk, by A. H. Blackington, a world famous news photographer, provided thrills as well as entertainment. Over 200 colored slides were used to illustrate the talk which included the "inside stories" on many of the leading news events of recent years, including storms, floods, tornados, wrecks, fires, murders and the Hauptmann trial, as well as many human interest features, such as famous New England scenes, lighthouses, lakes, shores and a number of absorbing pictures of the late Calvin Coolidge and his family amid his home surroundings. The talk, or informal lecture, was voted the best of its kind ever heard by many of those present.

L. D. Walker, president of the club, announced the details of the Golf Tournament which the club will hold this Spring and Fall. A tentative schedule and set of rules has been prepared by Secretary F. E. Rupert for distribution to those desiring to participate. Six teams (of six men each) have already entered the tournament, as follows:

Philips-Baker Co., Arthur J. Davis manager; Anaconda Wire and Cable Co., F. E. Rupert; Respro, Inc., S. J. Lake; Davol Rubber Co., E. L. Hanna; Collyer Insulated Wire Co., J. E. Marshall; The Peddlers, Gladding Price.

First matches will be held on May 9 to be followed by weekly matches up to the end of June, excepting the Decoration Day week-end. The concluding matches will be held on the first three weeks in September. A large silver cup for the winning team, and a small cup for the lowest average individual score of the tournament have been donated by THE RUBBER AGE.

Cups donated by THE RUBBER AGE for the Rhode Island Club's golf tournament.

Akron Rubber Group

The next meeting of the Akron Group, Rubber Division A. C. S., is scheduled for the Akron City Club on April 24. The usual oyster bar participation will precede the dinner, which will be served at 8:00 P. M. sharp. The only speaker for the evening will be Thomas J. Midgley, Jr., who will discuss the "Possibilities of Future Synthetic Rubbers." Election of new officers will also take place at this meeting. A. Brill, of the Republic Rubber Company, is the present chairman of the Akron Rubber Group.

Chicago Rubber Group

Dr. Harold Wakefield, of the Bakelite Corporation, presented a paper on "Synthetic Resins in the Rubber Industry" at the March 13th meeting of the Chicago Group, Rubber Division, A.C.S., held at the Adventurers Club in Chicago. Among other topics he stressed the value of cooperation between the resin and rubber industries so that combinations of the two products would result in improved finished materials. In addition to this talk, J. C. Nichols, noted hunter and sportsman, presented motion pictures on hunting game in Wyoming. The meeting was well attended.

The next meeting of the group is scheduled for May 1st at the Sherman Hotel when two technical papers will be presented, one by Captain Kuhn of the Chemical Warfare Service on "Rubber in Chemical Warfare" and the second by Dr. J. C. Patrick, research director of the Thiokol Corporation on "Rubber-Like Sulfur Polymers." B. W. Lewis, secretary of the group, advises that only those who have made reservations can secure dinner tickets the evening of the meeting.

Los Angeles Rubber Group

Sixty-two members and guests attended a special supper meeting of the Los Angeles Group, Rubber Division, A. C. S., held on Monday evening, March 23rd, in the Los Angeles Athletic Club.

This meeting, which was substituted for the regular April meeting, was called by Chairman G. G. Balazs, and Secretary Carl E. Stentz, because of the presence in Los Angeles of Dr. A. Moore of The Rubber Research Institute of Malaya, Kuala Lumpur, F.M.S. Dr. Moore is in America on an extensive trip occupying several months and is making a casual survey of the rubber manufacturing industry while in this country.

Dr. Moore, introduced by W. R. Hucks, spoke informally but at considerable length on the subject, "Causes of Variation in Crude Rubber and Latex." He explained in some detail production problems in the Far East and outlined briefly the purposes and method of operation of the Institute which he represents. He answered a large number of questions asked by members of the society.

Another speaker on the evening's program was George C. Follett of the Naugatuck Chemical Company, New York, who described in some detail methods of printing rubber labels used by his company. He distributed samples of this work.

Carl Bloom, of Godfrey L. Cabot, Inc., who was to have given a short talk on a topic of his own selection, was unable to be present.

Chairman Balazs announced that 10 new members had been added since the previous meeting, and those present were introduced. The total paid-up membership of the group is now 115.

H. H. Hummer (Xylos Rubber Company), in his capacity of chairman of the golf committee, announced that a blind bogey would be held on Saturday, April 18th, at the Lakewood Golf Course, and that competitive prizes would be awarded.

Door prizes at this special meeting were furnished by Arthur Wolff of the N. J. Zinc Sales Company, first prize, an artistic radio lamp, going to Arthur F. Pond (U. S. Rubber), and the second, a cigarette case, being won by Ed Royal (H. M. Royal).

The next supper meeting will be held on the first Tuesday evening in May at the Los Angeles Athletic Club. It will be the last regular indoor meeting until October, unless special meetings are oc-

casioned by the arrival in the city of leading technologists and rubber executives, a policy of the group. Door prizes at the May meeting will be donated by THE RUBBER AGE.

New York Rubber Group

One hundred and seventy-seven members and guests attended a meeting of the New York Group, Rubber Division, A.C.S., held on April 10 at the Building Trades Club, 2 Park Avenue, in New York City.

At a session held by the Executive Committee prior to the meeting, W. C. Lingvall, of the General Laboratories, U. S. Rubber Products, Inc., Passaic, N. J., was selected to act as chairman for the regular Summer outing and picnic which will again be held at Alps Castle, Preakness (near Paterson), N. J., probably on Saturday, June 13. Other outing committee members are to be named by Mr. Lingvall and R. D. Gartrell, chairman of the group. The executive Committee also discussed plans for the October and Christmas meetings.

Immediately after dinner was concluded, Mr. Gartrell introduced the first speaker of the evening, Col. A. F. Townsend, chairman of the board, Raybestos-Manhattan, Inc., who discussed the "Operations of the International Rubber Regulation Committee." In an interesting and amusing talk, Col. Townsend revealed the actual purpose of the regulation committee, described its membership and told of its progress. He stated that there is now available only six to seven months visible world stocks which, in his opinion, was "plenty low enough."

The speaker termed the restriction scheme a "very good economic proposition" but mildly criticized some of the statistics it has approved as regards an "equitable price" for crude rubber and its vague definition of "efficient producers."

The second speaker, D. A. Comes, Farrel-Birmingham sales engineer, in a very informative talk, discussed "Hot vs. Cold Breakdown of Rubber." For efficient hot breakdown he recommended 380 to 400° F., using an enclosed type of masticator. In using the standard Banbury he suggested that steam be used in jackets, rotor and doors in order to create the desired temperature.

Mr. Comes stated that tests have shown that 7½ minutes of hot breakdown secured a degree of plasticity equal to 4 hours on an open mill. The same tests revealed that hot breakdown decreased aging slightly after several years of storage life but that, surprisingly, the tensile was actually increased in the hot milled stock.

Marvelite Latex Shields

Said to be more comfortable in use than other types on the market, A. Stein and Company, Chicago, has introduced the Marvelite dress shield. Light, sheer and cool, the new shields have inner discs made by a special process. They are fashioned of a one-piece seamless latex, said to be an entirely new principle in dress shield construction.

Bates Sponge Rubber Mop

Eliminating many unsatisfactory features of ordinary brooms and mops, the Merchants and Manufacturers Company,

of Springfield, Mass., has introduced the Bates Broom Mop which is equipped with sponge rubber. It "erases" dirt and forms a suction that is said to actually absorb dust into the rubber cells. It is equipped with a patented wringer device which squeezes all the water out of the sponge rubber by a turn of the maple handle. The sponge rubber mop may be used wet or dry, depending on the desired cleaning operation.

GOODYEAR APPEALS FTC SEARS DECISION

The decision of the Federal Trade Commission ordering the Goodyear Tire and Rubber Company to desist from granting rebates and discounts to Sears, Roebuck and Company which it does not allow to its other customers on tires and tubes, rendered on March 5, was appealed by Goodyear on April 7. Goodyear asked the Federal Circuit Court of Appeals, at Cincinnati, to review the FTC's decision.

In its appeal, Goodyear set forth more than 100 findings of fact by the trade board which it alleges were erroneous and contrary to law. The petition also contends that the FTC failed to cite that the total amount of discrimination between Goodyear sales to Sears-Roebuck and the sales of an equal volume to independent dealers, after allowances for differences in the costs of selling and transportation, was $7,985,439, or less than 4½ per cent of the price of the equal volume to independents. It also avers that the difference in price charged Sears-Roebuck was due to a difference in the quantity sold.

The Federal body erred, according to the appeal, in striking out approximately $9,250,000 to $10,000,000 of Goodyear's overhead expenses from May 1, 1926 to December 1, 1933, which Goodyear claims was charged to and paid by Sears-Roebuck under provisions in the contract. Goodyear seeks a review of every main and auxiliary issue of the defense including the subject of quantity discounts.

VARIED PERCENTAGES IN JAPANESE EXPORTS

Exports of rubber products from Japan during 1935 varied widely in gain-and-loss percentages, according to figures made available by the Leather and Rubber Division of the Bureau of Foreign and Domestic Commerce. Of total rubber goods exports 50.2% consisted of footwear, 23.4% of tires, 10.1% of toys and 16.3% of other products.

Although exports of rubber footwear increased over 1934 in quantity by 20.9%, unit prices declined 3%, rubbers selling at 14 cents a pair and tennis shoes at 13 cents, according to declared values at the average exchange rate for the Japanese yen. Tire exports declined 10.2% in quantity but yen prices increased 8%. The decline in tire exports was considered surprising in trade circles.

Rubber toy exports declined 34.5% in total value as compared with the previous year, while other rubber goods increased 30.2% in value over 1934.

At the average 1935 exchange rate for the yen (28.75c) erasers were exported at 9¼ cents per pound, rubber hose at 11.9 cents, belting at 16.2 cents, and rubber thread and bands at 25.7 cents per pound. Unit values of United States exports of corresponding products in 1935 were: erasers, 55 cents; hose, 31 cents; belting 48 cents; rubber thread and bands 57.5 cents per pound.

The United States imported about 45% of the erasers exported from Japan in 1935, 13.4% of the rubber toys, 13% of the tennis balls (at $1.00 per dozen), 10.7% of the rubber belting (at 14.3c a lb.), 2.3% of the tennis shoes (at 20.5c a pair), 1% of the other rubber shoes and the tires, and 17.5% of the other Japanese rubber goods exports.

Stedfast Sponge-Grippers

An all-purpose slipper which lessens the danger of slipping on highly polished floors by means of soles made with the patented Spongegrip, has been introduced by the Stedfast Rubber Company, Inc., Mattapan, Boston, Mass. Known as Sponge-Grippers, the new style slippers may be worn in water, washed and sterilized. Said to be exceptionally pliable, they are also air-vented. A complete line for men and women has been made available.

Goodyear Mills Resume

Full time production has been resumed at both the Cedartown, Georgia and Decatur, Alabama, tire fabric mills owned by the Goodyear Tire and Rubber Company. Interruptions in production schedules were caused at both mills by the recent strike at the Akron factories of the parent company. The Cedartown mill employs 3,000 workers when operating full time.

Financial News

GOODRICH MAY PAY DIVIDEND ARREARS

A committee of the B. F. Goodrich Company board of directors is currently engaged in studying the preferred stock situation of the company with a view to making a settlement on dividend arrears. The study is expected to result in an early recommendation to stockholders in this connection, according to reports from Akron.

"There are still many difficulties to be overcome in the formulation of any final plan," said James D. Tew, president of Goodrich. "It is to be hoped, however, that provided no further untoward conditions arise it may be possible to make a recommendation in the next few months."

For the year of 1935 Goodrich reported a net profit of $3,429,781, a substantial increase over the profit of the preceding year. The number of company-owned stores in markets where "proper local representatives were not obtainable" also showed a considerable increase during the year. With regard to the proposed Goodrich bond refunding program which is being delayed by action in the New York courts, Mr. Tew is reported to have expressed regret over the necessity of the legal question involved on the grounds that "the past year has offered attractive opportunities for the sale of securities which could have resulted in substantial benefits to the company."

COLUMBIAN CARBON INCREASES EARNINGS

For the year ended December 31, 1935, the Columbian Carbon Company, and subsidiaries, reports a net profit of $2,992,860, equal to $5.56 a share, as compared with $2,111,367, or $3.93 a share, in 1934. Net sales for the period totaled $11,748,644 as compared with $9,776,490 in the previous period.

The consolidated balance sheet showed current assets of $6,872,132, including cash amounting to $2,121,978, marketable securities at cost of $1,217,068 having a quoted market value of $1,325,834 at the end of 1935, and inventories of $1,906,799. Current liabilities totaled $1,102,905. Total assets amounted to $49,006,235.

According to the report, the company registered natural gas sales of 39,921,810,000 cubic feet, a new peak, which brought a revenue of $3,052,034, which compares with a revenue of $2,481,350 from 32,794,075,000 cubic feet in 1934. Production of carbon black totaled 86,636,331 pounds during the year.

The improved operations have continued during the first two months of 1936, with sales of natural gas up 50% and total sales of all products 15% ahead of the same two-month period last year.

DUNLOP OF CANADA SHOWS LOSS FOR 1935

For the year ended December 31, 1935, operations of the Dunlop Tire and Rubber Company, Ltd., of Canada, resulted in a loss of $152,588 as compared with a loss of $224,088 in the previous year. Operating loss prior to provisions for depreciation and corporation taxes amounted to $24,814. The 1935 loss brought the company's debit balance up to $1,159,511.

At the end of the period, cash on hand amounted to $206,929; accounts receivable, $192,251; and inventories, at cost or market, $1,132,984. Fixed assets were carried at $4,427,451 against which there is a depreciation reserve of $1,757,019.

According to Arthur B. Purvis, Dunlop (Canada) president, Canadian Lastex, Ltd., in which Dunlop has an investment of $300,000 in 7% debentures and also holds 50% of the common stock, earned sufficient profits to provide for payment of all arrears of debenture interest up to the end of 1934 and also for part of the 1935 interest. During the year, Canadian Lastex re-purchased $50,000 of its debentures from Dunlop. Operations in 1936 are expected to result in profits large enough to pay off all interest arrears.

Raybestos-Manhattan Gains

For the year ended December 31, 1935, Raybestos-Manhattan, Inc., Bridgeport, Conn., earned a net income of $1,374,423, after providing $644,203 for depreciation and $296,000 for Federal and state income taxes, which compares with a net income of $780,891 in 1934. The 1935 profit is equivalent to $2.16 per share, omitting the stock in the treasury, as compared with $1.17 per share in the previous year. Net sales for 1935 totaled $17,501,328 against $13,671,532 in 1934.

Gain for Canadian Goodrich

After provisions for depreciation, bond interest, and other charges, the Canadian Goodrich Company reports a net profit of $66,556 for 1935. Net trading profit amounted to $333,075 as compared with $269,697 in the previous year. Current assets are listed at $2,179,488 against current liabilities of $436,544.

Loss for Intercontinental

A consolidated net loss of $92,542 for the year of 1935 is reported by the Intercontinental Rubber Company, and subsidiaries, which compares with a consolidated net loss of $110,063 in the preceding year. Profit from operations, before deductions, amounted to $98,921 as compared with $102,660 in 1934.

To Purchase Flintkote Co.

According to a registration statement filed on March 20 with the Securities and Exchange Commission, Lehman Brothers and associates have agreed to purchase from the Royal Dutch-Shell interests 330,614 shares of the Class B common stock of the Flintkote Company, East Rutherford, N. J., at $45 a share, or a total of approximately $15,000,000. The deal will give the New York banking house complete control of Flintkote. Of the total shares involved in the transaction, the Batavian Petroleum Corporation owns 182,288, the balance being in the hands of the Shell Union Oil Corporation. Flintkote recently reported a net income of $1,309,799 for the year of 1935, equal to $1.96 a share on 668,046 combined Class A and B shares outstanding.

Monsanto Increases Profit

Consolidated net earnings of the Monsanto Chemical Company, St. Louis, Missouri, for the year of 1935 amounted to $4,009,872. After providing for minority interests and preferred dividend requirements of subsidiary companies, earnings available to the common stock amounted to $3,843,390, or $3.84 a share on 999,123 shares outstanding, which compares with earnings of $2,771,629, or $3.20 a share on the 864,000 shares then outstanding. Common stock is now the only capital stock of Monsanto, and all funded debt has been eliminated, according to the report.

Profit for U. S. Reclaiming

A net profit of $102,057 for the year of 1935, after depreciation, Federal taxes and other charges, is reported by the U. S. Rubber Reclaiming Company, Inc., New York City, which is equal to $1.35 each on 76,425 shares of $25-par 8% cumulative prior preference stock. Accumulated unpaid dividends on this issue amount to $840,675, or $11 a share, while accumulated unpaid dividends on the Class A cumulative preferred stock amount to $295,960 or $8.25 per share.

Approve General Cable Plan

Stockholders of the General Cable Corporation on March 17 approved a plan to reduce the aggregate stated value of the common Class A stocks to $1,285,236 from $10,280,882. They also approved the transfer of the difference, $8,995,646, from capital to capital surplus, thus eliminating the operating deficit and creating an extraordinary reserve for obsolescence and contingencies.

Loss for American Zinc

For the quarter ended December 31, the American Zinc, Lead and Smelting Company, and subsidiaries, reports a net loss of $60,909 after depreciation, depletion, Federal taxes, and other charges, which compares with a $58,799 loss in the preceding quarter and a $41,188 loss in the similar quarter of 1934.

KLEINERT REPORTS PROFIT OF $158,958

For the year of 1935, I. B. Kleinert Rubber Company, College Point, Long Island, N. Y., reports a net profit of $158,958, after provision for depreciation, taxes and other reserves, equal to 92 cents a share on the outstanding common stock, which compares with a $39,010 profit or 22 cents a share in the previous year.

Current assets on December 31, 1935, amounted to $1,974,757, of which $613,182 was in cash and $1,063,951 in inventories, while current liabilities were listed at $301,625, a ratio higher than 6 to 1. At the end of the previous year current assets were carried at $1,857,899, of which $598,943 was in cash and $927,978 in inventories against current liabilities of $333,869.

Cyanamid Earns $1.61 a Share

The American Cyanamid and Chemical Company, New York City, reported a net income of $4,062,159 for the year ended December 31, 1935, equal to $1.61 a share on the combined 2,520,368 shares of Class A and B common stock outstanding, which compares with a profit of $2,495,644, or 99 cents a share in the previous year. Net operating profit before charges amounted to $7,738,825. During the year American Cyanamid sold privately $6,400,000 of 4% sinking fund debentures at 98, and incurred bank loans of $2,600,000, maturing serially, for the repayment of former obligations.

American Hard Rubber Profit

Contrasted with a net loss of $15,329 in 1934, the American Hard Rubber Company, New York City, reports a net profit of $145,727 for the twelve months of 1935 after ordinary taxes, depreciation, and other charges, but before Federal taxes. Capital stock consists of 22,682 shares of $100-par 8% preferred stock and 65,503 shares of $50-par common stock.

The 1935 profit was equal to $6.24 a share on the $100-par 8% cumulative preferred stock, and included a $13,668 profit accrued from liquidation of the American Hard Rubber Company of Great Britain.

Discusses Reclaimed Rubber

In the 1936 Convention Number of the *Waste Trade Journal*, L. J. Plumb, president, U. S. Rubber Reclaiming Company, New York City, discusses "The Reclaimer and the Scrap Rubber Dealer." He points out that reclaim has earned a place in the industry irrespective of low-priced natural rubber or increased use of synthetic rubber. As an example, Mr. Plumb points out that despite the fact that natural rubber sold for as little as 3½ cents per pound in 1932, the United States consumed 77,500 tons of reclaimed rubber in that year.

Colored Rubber Footwear

This year, with a colorful season in prospect, rubber footwear has gone in for color in a big way. The investment is so small that almost any woman could choose several pairs of shoes with different color accents and wear them with different colors in cotton dresses, slacks and shorts. This business is "extra" business that does not seriously interfere with the selection of fine shoes for fine wear. The play spirit in today's living is the cause of this new "plus" demand.

—Boot & Shoe Recorder

INDIA TIRE SUBMITS REORGANIZATION PLAN

On April 2 Federal Judge Samuel West, at Cleveland, Ohio, approved the request of the India Tire Company, of Mogadore, Ohio, to enter a "proceeding for reorganization" under Section 77-B of the new Bankruptcy Act. Officials of the tire company were given until April 10 to submit a plan of reorganization and by this time the plan should be under consideration.

The petition for the right to reorganize listed total current assets of $300,000 and liabilities of $370,000 revealing the company's handicap of operating with lack of capital. Chief liabilities included a note to the Reconstruction Finance Corporation, excise taxes and outstanding capital stock. Decision to seek court relief was taken at a meeting of stockholders on March 29.

950,000 Tons Consumed

According to a tabulation by Symington and Wilson, London (England) rubber brokerage house, total world consumption of rubber in 1935 amounted to 950,000 tons, which compares with 932,000 tons in the preceding year and 829,500 tons in 1933. The statistics reveal that the rest of the world, outside of the United States, consumed 23,500 tons less in 1935 than in 1934, increased American consumption making up for the balance. The report makes the prediction that consumption in America in 1936 will not be increased very much and that total world consumption will amount to approximately 975,000 tons.

Loss for O'Sullivan Rubber

A net loss of $66,924 for the year ended December 31, 1935, is reported by the O'Sullivan Rubber Company, Inc., Winchester, Virginia, after deducting depreciation and other charges. This compares with a net income of $26,877 in 1934, equal, after dividend requirements on preferred stock, to 3 cents a share on 100,000 shares of unsubordinated common stock.

INCREASED PRICES SEEN IN TIRE FIELD

A price rise in the tire field is generally expected prior to May 15, according to unconfirmed rumors in the trade, although there is a possibility that prices may be jumped late this month with an additional increase in May. The combined price rise is expected to run between 5 and 10%.

The tire industry is currently in the midst of one of its longest periods of stable prices as a result of a series of meetings held among the tire manufacturers last Fall. No recorded meetings have been held during the Winter months and therefore the price rise may not occur until mid-May. It is said to be necessary because of continued increased costs of raw materials and supplies.

Increased prices may be accomplished by several moves: discounts may be altered, narrowing the dealers' margin but increasing the return to the manufacturer; actual selling prices may be raised to official list which has not been in effect for more than a year; or list prices may be raised 5 to 10% and still permit present discounts of 22½%, 10% and 7½% off firsts allowed the dealer.

Auctioning Murray Factory

The entire plant of the Murray Rubber Company, including machinery, equipment, real estate, patents, etc., as well as 50,000 tires and tubes, is scheduled to be sold at auction on Wednesday and Thursday, April 15 and 16, on the premises at Trenton, N. J. Max Kalter and Company, 591 Broadway, and A. Schaap and Sons, 394 Broadway, both of New York City, are the auctioneers. Mr. Kalter purchased the assets of the company several months ago and operated the plant until recently. The stock of tires and tubes was to be sold on Wednesday, real estate and machinery the following day.

Ohio Rubber to Exhibit

Ohio Rubber Company, Willoughby, Ohio, will feature automotive, molded and extruded products at its exhibition at the Great Lakes Exposition to be held in Cleveland from June 27 to October 4. The exposition grounds will extend a mile along Cleveland's lake front. It is intended to portray the commercial, industrial and cultural aspects of the Great Lakes area.

Establishes Fellowships

Noting an "increasing demand for research workers and a very definite shortage of workers in this field," E. I. du Pont de Nemours and Company, Wilmington, Delaware, announced sixteen graduate fellowships in chemistry research on February 17. The appropriation for the fellowships amounted to $18,000, with twelve institutions, including Yale, Harvard and Princeton, selected.

Names in the News

S. A. FRAINE, associated with National Rubber Machinery Company, Akron, since 1925, has returned from a 3 year sojourn in Europe during which time he supervised National sales abroad and superintended manufacture of National equipment at the factory of David Bridge and Company, at Manchester, England.

K. L. MILLIGAN, vice-president and secretary, Pioneer Rubber Company, Willard, Ohio, is chairman of an entertainment program to be presented by Pioneer at the Willard Commercial Club on April 20.

CYRIL F. O'NEIL, treasurer, General Tire and Rubber Company, Akron, is acting as chairman of the Societies Division of the Catholic Charities Campaign Committee of Columbiana (Ohio) County.

EDWARD J. BERNHARDT has been appointed manager of the Pittsburgh office of the R. & H. Chemical Division of du Pont, succeeding the late CHARLES B. MCCLOSKEY who died on February 11.

E. J. THOMAS, general superintendent of Goodyear, was named assistant to President Paul W. Litchfield at a board of directors meeting held in Akron on March 30. H. J. YOUNG, former controller of Goodyear's California factory, was named assistant controller of the parent company.

F. ROBERT LEE, former vice-president of the Thermoid Rubber Company, Trenton, N. J., has been appointed receiver for the Trenton Malleable Iron Company, also of Trenton, of which company he is now vice-president and general manager.

T. G. GRAHAM, vice-president, B. F. Goodrich Company, Akron, has been elected vice-president of the Princeton University Alumni Association of Northern Ohio.

WILLIAM G. KLAUSS, president and board chairman of the India Tire Company, Mogadore, Ohio, was stricken with a heart attack on March 23. He is reported recovering in Peoples Hospital, Akron.

WM. J. KIRKPATRICK, associated with A. Schrader's Son, Brooklyn, New York, for twenty-six years, has resigned to join another well known sales organization and was tendered a luncheon by his Schrader associates prior to his departure.

CARL H. ZIEME, technical superintendent, Republic Rubber Company, Youngstown, Ohio, addressed a meeting of the American Society of Mechanical Engineers on "Mechanical Applications of Rubber Products" on March 24 at Youngstown.

W. E. LITKENHOUSE, Goodyear chemical research engineer, was recently appointed assistant professor of chemical engineering at the University of Louisville, Louisville, Kentucky.

C. K. SMALTZ, traffic manager, Mansfield Tire & Rubber Company, Mansfield, Ohio, acted as toastmaster at a dinner held by the Ohio Traffic Club last month at Marion, Ohio.

DR. WALLACE H. CAROTHERS, du Pont research chemist associated with the successful development of DuPrene, was recently married to Miss Helen E. Sweetman, also of the du Pont organization.

LYNN HARVEY, general sales manager, tire division, Dayton Rubber Manufacturing Company, Dayton, Ohio, was appointed a Kentucky Colonel recently.

HENRY C. PEARSON, founder and former editor of the *India Rubber World*, is recovering from an attack of influenza at the Pasadena Hospital, in Pasadena, California.

T. R. STENBERG, formerly with the engineering department of the Firestone Tire and Rubber Company, has joined the Marshall Asbestos Company, Troy, New York, as chief engineer.

Floods Bring Orders

The recent flood ravages resulted in a deluge of orders to the Surety Rubber Company of Carrollton, Ohio, which is now working to capacity to meet the unprecedented demand received from flood areas for linemen's gloves and electricians' materials, according to Sam Hall, president of the company. The increased business will give Surety the largest period in its history, the factory working 24 hours a day.

Endicott Johnson Building

A new five-story factory for the exclusive manufacture of rubber footwear will soon be constructed by the Endicott Johnson Corporation, of Johnson City, N. Y., according to report. Expected to take the better part of a year in construction, the factory, when completed, will employ approximately 400 workers on all types of winter rubber footwear. The new production unit will occupy approximately 50,000 square feet of floor space.

FEBRUARY ABSORPTION 24.2% BELOW JANUARY

Consumption of crude rubber by manufacturers in the United States for the month of February is estimated to be 36,746 long tons, which compares with 48,506 long tons for January. February consumption shows a decrease of approximately 24.2% below January and 14.9% below February a year ago, according to statistics released by the Rubber Manufacturers Association. Consumption for February, 1935, was reported to be 43,187 long tons.

Imports of crude rubber for February were reported to be 35,219 long tons, an increase of 12.5% above the January figure of 31,292 long tons, and practically no change as compared with 35,383 long tons imported in February, 1935.

Total domestic stocks of crude rubber on hand February 29th are estimated at 273,284 long tons, which compares with January 31st stocks of 276,372 long tons and 339,335 long tons on hand February 28, 1935.

Crude rubber afloat to U. S. ports as of February 29th is estimated to be 46,532 long tons, as compared with 43,870 long tons afloat on January 31st, and 42,969 long tons afloat on February 28th a year ago.

February reclaimed rubber consumption is estimated at 7,366 long tons; production, 10,188 long tons; and stocks on hand, February 29th, 28,267 long tons.

TIRE SHIPMENTS DROP 6.7% BELOW DECEMBER

Shipments of pneumatic casings during the month of January, 1936, are estimated to be 3,874,764 units, a decrease of 6.7% under December, 1935, and 5.8% over shipments made in January, 1935, according to statistics released by the Rubber Manufacturers Association.

Production of pneumatic casings for January, 1936, is estimated to be 4,578,710 casings, an increase of 13% over December, 1935, but 1% below January, 1935.

Pneumatic casings in the hands of manufacturers on January 31, 1936, are estimated to be 8,918,177 units, an increase of 8.8% above the stocks on hand December 31, 1935, and 14.2% below stocks on hand January 31, 1935.

The actual figures are as follows:

PNEUMATIC CASINGS

	Shipments	*Production*	*Inventory*
Jan., 1936	3,874,764	4,578,710	8,918,177
Dec., 1935	4,153,807	4,051,286	8,195,863
Jan., 1935	3,662,615	4,626,473	10,397,667

Davis-Jones to Move

The Davis-Jones Wire Company, of Phillipsdale, Rhode Island, will shortly move to Pawtucket in which city it has purchased the factory of the Potter Fine Spinners, Inc. Moving will be started as soon as the purchased property is cleared of machinery and equipment of its former owners.

Obituaries

Joseph Pietzuch

Joseph Pietzuch, creator of rubber heels for corrective shoes, died in his sleep on March 15 at his home in Glendale, California. He was best known for his development of the dual resiliency principle, more than a half million pairs of these heels being produced in the past year by the West American Rubber Company, of Los Angeles, under the direction of both Mr. Pietzuch and Charles Lamb who had worked on the development since its creation. The heels were purchased by one of the largest shoe manufacturers in the United States. Mr. Pietzuch also held several other patents connected with corrective shoes, including an insole and a shoe measuring device. Born in the Balkans, Mr. Pietzuch was brought to this country when a boy. He established his first retail shop featuring corrective shoes in Cincinnati. About 10 years ago he became associated with the International Shoe Company at St. Louis. He retired from active business in 1934 and spent the balance of his days looking after his patent rights and advising manufacturers using his appliances. Funeral services were held on March 19 at the Church of the Incarnation, Glendale. He is survived by a widow.

William S. Smith

William S. Smith, former shoe manufacturer and widely known as a developer of rubber heels, died on March 9 of creeping paralysis at his home in Elyria, Ohio, after a lengthy illness. In 1914 the late John George Tufford invented the section type of rubber heel while employed in Mr. Smith's shoe emporium. The latter backed the invention, profits the first year paying 30% of the stock assessment and rising to $1,000,000 by the fourth year. Funeral services were held on March 11 at St. Paul's Evangelical Church in Elyria. Three children survive.

E. R. Kenner

E. R. Kenner, manager of the tire division of the Shell Petroleum Corporation, and previously associated with the B. F. Goodrich sales organization from 1926 to 1931, died of pneumonia after a two-day illness on March 20 in St. Louis, Missouri. Widely known in rubber, petroleum and automotive circles, Mr. Kenner was recently appointed to the Shell Petroleum position. Burial was made at Atlanta, Georgia, his birthplace. His widow, a daughter and two sons survive.

Erastus E. Dorman

Erastus E. Dorman, former president and treasurer of the Haverhill Rubber Company, Haverhill, Mass., died recently as the result of a heart attack. Born in Beddington, Maine, in 1861, Mr. Dorman attended Cannon's Business College in Lawrence, Mass., and became manager of the Crocker System Stores soon after being graduated. In 1907 he founded the Haverhill Rubber Company and remained president until 1929 when he sold the company and retired from active business. A son, sister and brother survive.

Albert Theilgaard

Albert Theilgaard, founder of the Aktieselskabet Dansk Galoche-Og Gummifabrik, Kjoge, Denmark, and inventor of the so-termed neutral process for reclaiming rubber, died on March 6 in Copenhagen after a short illness at the age of 59. In 1924 Mr. Theilgaard lost control of his rubber company which was beset by financial difficulties and was even accused of defrauding investors. He lived long enough to secure not only complete vindication, but also to secure from the Danish Government the largest compensation ever paid. The company he founded is today the largest rubber factory in Denmark, rubber footwear being its principal product.

Samuel Cadwallader

Samuel Cadwallader, of Lower Ferry Road, Trenton, N. J., former vice-president and general manager of the Whitehead Brothers Rubber Company, of Trenton, died on March 24 in Mercer Hospital, at the age of 71. He had been in failing health for some time. Starting in a clerical position, Mr. Cadwallader was associated with Whitehead Brothers for 35 years. He was born in Ewing, N. J. Burial took place in Ewing Church Cemetery, Trenton.

Predicts Japanese Rise

Speaking at a meeting of the Netherlands East Indian Committee for the Expansion of Rubber Exports, held on March 22 at Batavia, Dr. G. M. Kraay, well known rubber expert, predicted a quick rise to prominence by the Japanese rubber manufacturing industry. Reporting on his recent visit to Japan, Dr. Kraay stated that he was amazed at the "simplicity and efficiency of the factories and the ability of the workmen."

Expanding Pioneer Plant

The Pioneer Asphalt Company, owned and operated by Wishnick-Tumpeer, Inc., has announced the expansion of its Lawrenceville (Illinois) factory to take care of increasing business. Considerable rehabilitation of present buildings and equipment was undertaken recently in addition to new construction activities.

Goodrich Plans Factories

In a talk to employees on April 6, T. G. Graham, vice-president of the B. F. Goodrich Company, Akron, revealed that the company is making plans for a new tire and tube factory somewhere in the East as well as for a mechanical rubber goods factory "outside of Ohio." The necessity for the new factories, according to Mr. Graham, is due to the "disorderly events which have taken place in Akron recently." He said that some of Goodrich's best customers were not willing any longer to "take chances on their source of supply." The Goodrich factory was recently the scene of sit-down protests similar to those which led to the prolonged strike at Goodyear. There is a report that Goodrich is considering Oaks, Pennsylvania, near Philadelphia, as the site for one of the proposed new factories.

LOS ANGELES NEWS

The West American Rubber Company, Los Angeles, is putting under production this month a high pressure rotary hose and coupling, oil well equipment, which Charles Lamb, in charge of production at the plant, states is an improvement over equipment formerly used. This same company installed during the month a die casting machine for casting ductile appliances for ends of packing sets used with slush pumps in the oil fields.

Charles N. Merralls, president of the California Rubber Manufacturers' Association, announces that his group will hold a social meeting late in April at a Los Angeles location not yet selected. There was no meeting in March.

A big increase in demand for rubber yacht blocks, replacing blocks of *Lignum Vita* formerly used, is announced by Charles Lamb of the West American Rubber Company. There are numerous advantages in the use of rubber for these blocks, Mr. Lamb states. The blocks are used in connection with pulley sets employed in hoisting and lowering sails. Dangling on ropes the resilient rubber does no damage to masts or rigging. They are noiseless and are less dangerous when swinging in mid-air in wind storms. They need no refinishing, do not water soak and are much longer lived, Mr. Lamb points out. They are of equal weight with the wooden blocks and no more costly.

Carl Stentz, of the E. M. Smith Company, secretary of the Los Angeles Group of Rubber Division, A. C. S., made an airplane trip to the Pacific Northwest on business during the month. Mr. Stentz is one local rubber man who pronounces himself keen for air travel.

New Rubber Goods

Cover-O Rubber Jacket

A brand new item for kitchen use, known as the Tidy Cover-O, has been introduced by the Cover-O Company,

225 N. Michigan Avenue, Chicago. It is a colorful rubber jacket for cleanser cans and soap flake boxes, and may be adapted to similar packaged items used in the kitchen. Cover-O is a one-piece slip-cover, made of rubber, that slides easily over cans or boxes and is available in colors to match kitchen decorative schemes. Its elasticity holds it firmly in place when applied.

Kreme-Pour Separator

The housewife's problem of securing the cream from the top of milk bottles without mixing in any milk has been solved by a novel device known as the

Kreme-Pour Separator, introduced by the Kreme-Pour Separator Company, of Superior, Wisconsin. The separator consists of a rubber disc and a wire handle, the rubber being fat-resisting and non-porous especially compounded to withstand butter-fat and animal-fat found in milk and cream. In operation, the handle is squeezed until the disc reaches a horizontal position when it is pushed down into the neck of the bottle along the side-wall until it reaches the "cream line." Releasing the grip on the wire allows the disc to flatten out. It is then pulled up slowly to a point where the milk is entirely separated from the cream and can be easily poured.

Gillette Traction Tire

Designed for use on passenger cars, trucks and tractors, the Gillette Rubber Company, Eau Claire, Wisconsin, has brought out an air-cooled, super traction tire, which is said to prevent spinning and sliding on all types of roads. The new tires need no chains when

snow, ice or sleet is encountered, due to a button design on the tread consisting of numerous lugs or knobs which dig in like the calks of a horseshoe. The knobs are conical in shape. For use where smooth, hard ice is encountered, Gillette has designed steel ice-grips for the super-traction tread. These grips are made of hardened steel, spring shaped, and screw onto the rubber knobs readily, exposing a sharp steel surface which cuts into the ice. These ice-grips are intended for use as added protection against skidding.

Selfvulc Bonding Solution

A water-proof primer, known as Selfvulc "M" Bonding Solution, has been introduced by the Self-Vulcanizing Rubber Company, Inc., of Chicago. Originally developed as an adhesive for difficult applications to impervious smooth surfaces, it is said to have proven more effective on all porous surfaces—wood, composition, plasterboard, etc. Where an exceptionally strong bond is required it is used full strength, but can be cut 50% where it is not subjected to high duty or severe service, thus increasing coverage and reducing costs. For corrosion protection a single coat of the "M" bonding solution is said to be sufficient.

Mason Glass Cleaners

Glass cleaners made of sponge rubber are being featured by the Mason Bath Toy Company, 45 East 20th Street, New

Cleaner for round bottom glass

York City. They are available in two styles, one for cleaning straight or fluted glasses, and the other for round bottom glasses. The straight or fluted glass style has a 2¾-inch sponge rubber cov-

Cleaner for fluted glass

ering at the bottom, shaped to clean bottom and sides, while the model used for cleaning round bottom glasses is equipped with a 1½-inch ball (wood core) sponge covered. Both dowels are eight inches long and are furnished in colors to match kitchen color schemes.

Anchored-in-Rubber Battery

Motor-cycle batteries are subjected to violent vibration caused by passage of the rear wheels over rough roads. A battery recently perfected by Joseph Lucas, Ltd., Great King Street, Birmingham, England, known as the Anchored-in-Rubber Battery, is said to overcome this difficulty by its design. The battery is carried by two stout lugs,

soldered to the machine itself, thus forming a rigid mounting. The fixing rod at each end of the battery is mounted in rubber bushings which are molded integrally with the battery case. This use of rubber insulates the battery from road shocks and engine vibration, in this manner increasing motor-cycle battery life.

Rubber-Tired "Lawn-Boy"

The latest recruit to join the ranks of lawn mowers equipped with rubber tires, is the Evinrude Lawn-Boy, power-equipped lawn mower manufactured by the Outboard Motors Corporation, Milwaukee, Wisconsin. It features "one-

hand" control, a weight of only 95 lbs., cuts an 18 inch swath, is 25 inches wide, and will mow up to 3 acres a day at a fuel cost of 20 cents. Lawn-Boy can also be equipped with a specially designed grass catcher of large capacity. The rubber tires are being offered as optional equipment.

Gordon Improved Suction Cup

An improvement in the design of its rubber suction cups has been made by the Gordon Manufacturing Company, of New York City. A narrow rim has been added on the outside edge of the cup, which, when pressed against the object it is intended to hold, seals the air in the cup, thereby preventing any leakage and assuring a more permanent

hold. The holding power for a 2-inch cup has been established to be 15 pounds. Commercial use of rubber suction cups is said to be expanding rapidly.

Mishawaka Rubber Cushions

A line of cellular rubber seat cushions has been announced by the Mishawaka Rubber and Woolen Manufactur-

ing Company, Mishawaka, Indiana, one of the oldest rubber footwear makers in the country. Intended for use in the transportation field, the new cushions are porous, are molded to exact shape and size required, do not sag or break down, and in cases where leg and head room must be saved they have an advantage over conventional cushions in that they do not need to have similar thickness for equal cushioning and shock-absorbing action.

Fulton "Wild West" Sets

One of the several rubber stamp picture sets being merchandised by the Fulton Specialty Company, Elizabeth, N. J.,

is termed "Wild West" which consists of a set of picture stamps, ¾-inch sign markers, ink pad, six crayons, paper pad and ruler. The rubber stamps depict Indians on the warpath, covered wagons, cowboys, and other figures associated with early western frontier days. The rubber stamp outline figures are mounted on varnished handles.

Bassick "Flotilt" Chair Control

Claimed to have many features of superiority over existing types of chair construction, the Bassick Company, Bridgeport, Conn., has introduced the "Flotilt" Chair Control. The tilting unit in this control mechanism is compressed rubber, completely enclosed in steel and fully protected against atmospheric deterioration. The new control has no springs, prevents sidesway, requires no lubricating, and has eliminated squeaks and squeals. It is easily adjusted by means of a hand-wheel controlling elevation which is out of sight. It is said to be the most important development in office chairs in twenty years.

New Weaver Ball Line

The C. B. Webb Company, Lebanon, Penna., has introduced a complete new line of Weaver valve and health balls in a wide variety of color effects. Colors

are said to be fast and brilliant. The valve balls are packed in individual boxes with inflating key and full instructions inserted in each box. The health balls are permanently inflated,

lacquered, air-filled, and are made of the same compound used in the valve style, which is stated to eliminate cracking and prevents balls from going soft. Both a mottled and marbleized style are reproduced herewith.

New G-E Electric Cable

A new, totally fire-proof, multi-conductor elevator control cable, also resistant to moisture, oil and corrosive vapors, has been added to the Deltabeston line featured by the General Electric Company's Merchandise Department, Bridgeport, Conn. Constructed for high flexibility and wear-resistance, flame resistant rubber and water-proof rubber insulates the soft, flexible copper

strands, with a wall of felted asbestos applied over the rubber. The cable is bound together with a single-faced rubberized tape, each conductor being color marked.

MARKETS

RUBBER—COTTON AND FABRICS—CHEMICALS

NEW YORK, APRIL 8, 1936

Crude Rubber

RUBBER prices swung in a 25 point range this past month despite a series of unfavorable events including the strike at Goodyear which resulted in a smaller consumption figure for the United States in February than had been anticipated, an increase in dealers' stocks in Malaya, unsettled European conditions, and lessening of consumer demand. High for the month was reached shortly after the Goodyear strike was settled, i.e., 16.06 was quoted on the Exchange for spot on March 21; low for the month was a 15.81 quotation on March 13, touching this figure again on April 3 and 4. The market has been undergoing a period of consolidation in recent weeks, although the underlying conditions are bullish and favor still higher prices. Many operators are awaiting the next meeting of the International Rubber Regulation Committee which takes place on April 28. Quotations in the outside market; Exchange, London and Singapore, follow:

As of April 8

Plantations—

Ribbed Smoked Sheets—			
No. 1 Spot	—	@	.16
May-June	—	@	.16 1/32
July-September	—	@	.16 1/4
No. 2	—	@	.15 13/32
No. 3	—	@	.15 7/32
No. 4	—	@	.15 1/32
Thin Latex Crepe	—	@	.16 3/32
Thick Latex Crepe	—	@	.16 3/32
Brown Crepe, No. 1	—	@	.15 13/32
Brown Crepe, No. 2	—	@	.15 7/32
Amber Crepe, No. 2	—	@	.15 13/32
Amber Crepe, No. 3	—	@	.15 7/32
Amber Crepe, No. 4	—	@	.15 3/4
Brown Crepe, Rolled	—	@	.15 1/2

Latex—

Liquid Latex, per gal.	.60	@	.61

Paras—

Up-River, fine	—	@	.17 1/4
Acre Bolivian, fine	—	@	.18

Balata—

Block, Ciudad	—	@	.32

LONDON MARKET

Standard Smoked Sheets—Buyers—April 8			
April	—	@	7 9/16d
July-September	—	@	7 11/16d

SINGAPORE MARKET

Standard Smoked Sheets—Sellers—April 8			
April	—	@	7 13/32d
July-September	—	@	7 15/32d

Reclaimed Rubber

Since our last report the price on red reclaimed rubber has gone up ½ cent, prices on other grades remaining unchanged. Many grades are selling at approximately one-third that of crude rubber, a situation which has existed for several months. Reclaimers are optimistic for the future seeing a general business pick-up. Current quotations follow:

High Tensile

Super-reclaim, black	.08 3/4	@	.09
High Tensile Red	.07 1/2	@	.07 3/4

Shoe

Unwashed	.06 1/2	@	.06 3/4
Washed	.08	@	.09

Tube

No. 1 (Floating)	.14	@	.14 1/4
No. 2 (Compounded)	.07	@	.07 1/4
Red tube	.07	@	.07 3/4

Tires

Black	.05	@	.05 1/4
Black, selected tires	.05 1/4	@	.05 1/2
Dark Gray	.06 1/4	@	.06 1/2
White	.09 1/4	@	.09 1/2
Truck, Heavy Gravity	.05 1/2	@	.06
Truck, Light Gravity	.06	@	.06 1/4

Miscellaneous

Mechanical blends	.03 1/2	@	.04 1/2

Scrap Rubber

Scrap rubber prices held steady last month with the exception of a slight rise in inner tubes due to scarcity of available stocks. Weather conditions continue to retard general collections. Dealers view the future with confidence as crude rubber prices hold above 15 cents per pound. Current quotations follow:

(Prices to Consumers)

Auto tire peelings	ton 19.00	@	21.00
Mixed auto	ton 8.50	@	10.00
Clean solid truck tires	ton 34.00	@	36.00
Boot and shoes	ton 22.50	@	25.00
Arctics, untrimmed	ton 17.50	@	19.00
Inner tubes, No. 1	lb. .09	@	.10
Inner tubes, No. 2	lb. .04 1/4	@	.04 1/2
Inner tubes, Red	lb. .04 1/4	@	.04 1/2

Cotton

In the face of political uncertainty cotton prices rose steadily from the middle of March to the end of the month with few reactions. Starting at 11.35 on March 9 prices climbed one, two and three points a day to reach 11.72 on March 31, high for the period. Two-thirds of the steady gain was lost, however, on April 1 when the price broke 16 cents on spot cotton on the announcement of the Government's plan to bring about the sale of at least part of the 4,500,000 bales now being carried by the Commodity Credit Corporation as past due 12 cent loans to growers, resulting in an 11.56 quotation. With clarification of the Government's proposal, prices in the past week have been erratic, an 11.70 quotation, however, being reached today (April 8). Selling agents for cotton mills predict increased consumption of cotton as soon as the tax proposals now under consideration are definitely settled one way or the other. Quotations for middling uplands on the New York Cotton Exchange follow:

	March 9	April 8		
	Close	High	Low	Close
April	....	11.30	11.30	11.30
May	10.83	11.32	11.27	11.30
July	10.52	11.03	10.97	11.03

Tire Fabrics

(Prices Net at the Mill)

Peeler, carded, 23/5/3	lb. .29	@	.29 1/2
Peeler, carded, 23/4/3	lb. .30	@	.30 1/2
Peeler, carded, 15/3/3	lb. .27	@	.27 1/2
Peeler, carded, 13/3/3	lb. .26	@	.26 1/2
Egyptian, carded, 23/5/3	lb. .43	@	.43 1/2
Egyptian, combed, 23/5/3	lb. .48	@	.48 1/2
CHAFERS			
Carded, American, 1 1/16"	lb. .29	@	.29 1/2
Carded, American, 1"	lb. .27	@	.30 1/2
LENO BREAKER			
Carded, American, 1 1/16"	lb. .30	@	.30 1/2
Carded, American, 1"	lb. .28	@	.28 1/2

Sheetings

Count	Width	Weight			
48x40	36 in.	5.50	lb.	— @	.04 3/4
40x40	36 in.	6.15	lb.	— @	.04 1/8
40x36	36 in.	6.50	lb.	— @	.03 7/8
48x48	40 in.	2.50	lb.	— @	.08 3/4
48x48	40 in.	2.85	lb.	— @	.07 1/8
56x60	40 in.	3.60	lb.	— @	.07 3/4
48x44	40 in.	3.75	lb.	— @	.06 1/2
44x40	40 in.	4.25	lb.	— @	.06

Ducks

Enameling	lb. .29	@	.29 1/2
Belting and Hose	lb. .26 1/2	@	—
Single filling, A grade	lb. .13 1/2	@	.14 1/2
Double filling	lb. .14 1/2	@	.15

Closing Rubber Prices on New York Commodity Exchange, Inc.

No. 1 Standard Contract of 10 tons

FROM MARCH 10 TO APRIL 7

Date	Spot	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Sales
Mar. 10	16.00	15.94	15.99	16.05	16.08	16.11	16.16	16.21	16.25	16.29	16.34	16.38	16.42		110
11	15.93	15.92	15.98	16.04	16.07	16.11	16.15	16.20	16.23	16.26	16.29	16.33	16.37		109
12	15.93	15.88	15.93	15.98	16.01	16.04	16.07	16.10	16.14	16.18	16.22	16.26	16.30		113
13	15.81	15.81	15.86	15.91	15.94	15.97	16.01	16.06	16.09	16.12	16.15	16.19	16.23		31
14	16.00	15.97	16.00	16.04	16.08	16.13	16.18	16.23	16.26	16.29	16.32	16.36	16.40		96
15															
16	15.93	15.89	15.92	15.96	15.99	16.02	16.06	16.11	16.14	16.17	16.21	16.25	16.29		95
17	15.87	15.83	15.86	15.90	15.92	15.95	16.00	16.05	16.09	16.13	16.17	16.21	16.25		74
18	15.81	15.78	15.81	15.85	15.89	15.93	15.97	16.01	16.03	16.06	16.09	16.12	16.15		102
19	16.00	16.01	16.03	16.06	16.10	16.14	16.16	16.18	16.21	16.25	16.29	16.33	16.37		145
20	16.06	16.01	16.04	16.08	16.12	16.16	16.19	16.23	16.25	16.28	16.31	16.34	16.37		144
21	16.06	16.03	16.04	16.05	16.08	16.12	16.17	16.22	16.25	16.28	16.32	16.35	16.38		44
22															
23	16.06	16.04	16.06	16.08	16.11	16.15	16.21	16.27	16.29	16.31	16.34	16.37	16.40		93
24	15.96	15.96	15.97	15.98	16.01	16.04	16.08	16.12	16.16	16.20	16.25	16.28	16.31		89
25	15.93	15.90	15.93	15.96	15.99	16.03	16.07	16.11	16.14	16.18	16.22	16.25	16.28		101
26	15.90	15.88	15.91	15.94	15.97	16.00	16.06	16.12	16.14	16.17	16.20	16.23	16.26		41
27	15.87	——	15.87	15.91	15.96	16.01	16.06	16.12	16.15	16.18	16.22	16.25	16.28		28
28	15.91	——	15.82	15.86	15.90	15.95	16.00	16.05	16.09	16.13	16.16	16.20	16.23		169
29															
30	15.88	——	15.84	15.88	15.92	15.96	16.02	16.08	16.11	16.14	16.17	16.20	16.23		85
31	15.88	——	15.84	15.88	15.92	15.96	16.00	16.05	16.07	16.12	16.18	16.21	16.25		60
Apr. 1	15.93	——	15.94	15.98	16.02	16.06	16.10	16.14	16.18	16.22	16.26	16.29	16.32	16.35	125
2	15.93	——	15.96	16.00	16.04	16.08	16.11	16.15	16.18	16.22	16.26	16.31	16.36	16.42	62
3	15.81	——	15.81	15.85	15.89	15.93	15.98	16.03	16.06	16.10	16.14	16.18	16.22	16.26	144
4	15.81	——	15.81	15.85	15.89	15.93	15.98	16.04	16.07	16.10	16.14	16.17	16.20	16.23	34
5															
6	15.93	——	15.93	15.97	16.01	16.05	16.10	16.16	16.19	16.24	16.29	16.32	16.35	16.38	39
7	15.93	——	15.91	15.95	16.00	16.05	16.09	16.13	16.17	16.21	16.25	16.28	16.31	16.34	34

Rubber CHEMICAL Markets

NEW YORK, APRIL 10, 1936

[All Quotations F.O.B. Works Unless Otherwise Noted]

ACCELERATORS

Organic			
A-1 (Thiocarbanilid)	lb.	.21 @	.25
A-5-10	lb.	.33 @	.36
A-7	lb.	.53 @	.65
A-11	lb.	.60 @	.75
A-16	lb.	.55 @	.65
A-19	lb.	.56 @	.75
A-32	lb.	.70 @	.80
A-17	lb.	— @	—
Aldehyde ammonia, crystals	lb.	.65 @	.70
Altax	lb.	— @	—
Captax	lb.		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.44 @	.47
Diphenylguanidine	lb.	.35 @	.37
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½ @	.42
Guantal	lb.	.42 @	.51
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.37 @	—
Lead Oleate, No. 999	lb.	.11 @	—
Witco	lb.	.11 @	—
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.36 @	.37
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Phenex	lb.	.50 @	.55
Pipsolene	lb.	3.55 @	4.00
R & H 40	lb.	.40 @	.41
R & H 50	lb.	.40 @	.41
R-2	lb.	1.55 @	1.90
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Thiocarbanilid, drums	lb.	.21 @	.25
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.60
Tuads	lb.		
Ureka	lb.	.62 @	1.00
Ureka B	lb.	— @	—
Ureka C	lb.	.58 @	.69
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.48 @	.60
Zimate	lb.		
Inorganic			
Litharge, domestic	lb.	.06½ @	.07
Magnesia, calcined, heavy	lb.	.04 @	—

COLORS

Blacks (See Compounding Materials)

Blues			
Prussian	lb.	.37 @	.39
Ultramarine	lb.	.15 @	—
Browns			
Sienna, Italian	lb.	.06 @	'13
Umber, Turkey	lb	.04 @	.04½
Greens			
Chrome, light	lb.	.20 @	.30
medium	lb.	.21 @	.31
Chromium Oxide, bbl.	lb.	.19 @	.20
Guignet's Green	lb.	.70 @	—
Reds			
Antimony			
crimson, 15/17	lb.	.48 @	—
sulfur, free	lb.	.48 @	.60
Indian English	lb.	.09 @	.10
Domestic (Maroon)	lb.	.11 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red, f.o.b. Easton	lb.	.09¼ @	—
Whites			
Cryptone CB, No. 21	lb.	.06 @	.06¼
Cryptone, No. 19	lb.	.06 @	.06¼
Cryptone, ZS-20	lb.	.10½ @	.10¾
Cryptone, ZS-86	lb.	.10½ @	.10¾
Lithopone			
Albalith, black label—11	lb.	.04½ @	.04¾
Azolith	lb.	.04½ @	.04¾
Rayox	lb.		
Titanium oxide	lb.	.17 @	.18½
Titanox B	lb.	.06 @	.06¼
Titanox C	lb.	.06 @	.06¼
Zinc Oxide—American Process			
American Azo			
ZZZ (lead free)	lb.	.05 @	.05¼
ZZ (leaded)	lb.	.04⅞ @	.05¼
Anaconda, lead free	lb.	.05 @	.05¼
Horsehead Lead Free Brand			
Special—3	lb.	.05 @	.05¼
XX Red—4	lb.	.05 @	.05¼
XX Red—72	lb.	.05 @	.05¼
XX Red—78	lb.	.05 @	.05¼
XX Red—103	lb.	.05 @	.05¼
U. S. P.—X. bbls.	lb.	.08 @	.08¼
Kadox, black label—15	lb.	.05 @	.05¼
Blue label—16	lb.	.05 @	.05¼
Red label—17	lb.	.05 @	.05¼
St. Joe, black label	lb.	.05 @	.05¼
green label	lb.	.05 @	.05¼
red label	lb.	.05 @	.05¼
Zinc Oxide—French Process			
Florence White seal—7 bbls.	lb.	— @	.06¾
Green seal—8	lb.	.06 @	.06¾
Red seal—9	lb.	.05½ @	.05¾
Yellows			
Chrome	lb.	.11 @	.12
Ocher, dom. med.	lb.	.02¾ @	—

BLACKS

Arrow "Aerfloted" Specification	lb.	.0535 @	.0825
Bone, powdered	lb.	.05½ @	.12½
Carbon, compressed	lb.	.0535 @	.0825
uncompressed	lb.	.0535 @	.0825
"Certified," Cabot	lb.	.0535 @	.0825
Spherons	lb.	.0535 @	.0825
"Disperso"	lb.	.0535 @	.0825
Drop, bbls.	lb.	.05½ @	.14
"Excello," compressed	lb.	.0535 @	.0825
"Fumonex"	lb.	.03 @	.07
"Gastex"	lb.	.03 @	.07
Lampblack	lb.	.07 @	.12
"Micronex"	lb.	.0535 @	.0825
"Supreme"	lb.	.0535 @	.0825
Thermatomic—"P 33"	lb.	— @	—
"Thermax"	lb.	— @	—
United "Dixie" & "Kosmos"	lb.	.0535 @	.0825

COMPOUNDING MATERIALS

Aluminum Flake	ton.	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½ @	.12
Asbestine	ton	13.00 @	15.00
Barium carbonate (98-100%)	ton	56.50 @	61.50
Barium Dust	lb.	.05 @	.06
Barytes	ton	23.65 @	31.15
Basofor	lb.	.04½ @	—
Bentonite	lb.	.02 @	.03
Blanc fixe dry f.o.b. works	ton	70.00 @	75.00
Calcene	ton	37.50 @	45.00
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated			
Suprex white, extra lt.	ton	45.40 @	60.00
heavy	ton	45.00 @	55.00
Clay, Kaolin, domestic	ton	7.50 @	15.00
Aerfloted, Suprex	ton	8.50 @	10.00
Congaree	ton	9.00 @	—
Dixie	ton		
Dixie, Jr.	ton		
McNamee	ton		
Par	ton		
Tensulite		15.00 @	—
Witco	ton	8.50 @	9.00
Cotton Flock	lb.	.11 @	.15
Glues, extra white	lb.	.28 @	.30
medium white	lb.	.14 @	.19
Kalite No. 1	ton	30.00 @	55.00
Kalite No. 3	ton	40.00 @	65.00
Magnesium carbonate	lb.	.08 @	—
Mica	ton	35.00 @	—
Pyrax A	ton	— @	—
Rottenstone (powdered)	lb.	.02½ @	.05
Soapstone, powdered	ton	16.00 @	22.00
Starch, powdered	cwt.	3.19 @	3.39
Talc, domestic	ton	16.00 @	18.00
Whiting, commercial	ton	17.00 @	18.00
Columbia Filler	ton	9.00 @	14.00
English Cliffstone	ton	33.00 @	43.00
Sussex	ton		
Witco	ton	7.00 @	—
Wood Flour	ton	18.00 @	30.00
Zinc Carbonate	lb.	.10½ @	.11
Zinc Stearate	lb.	.26 @	—

MINERAL RUBBER

Black Diamond	ton	27.00 @	—
Genasco, solid (factory)	ton	25.00 @	27.00
Hard Hydrocarbon	ton		
Parmr, solid	ton	31.00 @	—
Pioneer, MR, solid	ton		
Pioneer-granulated	ton		

SPECIALTIES

Aromatics—Rodo	lb.		
Para-Dors No. 5145	lb.	2.00 @	—
Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.80
Tonox	lb.	.56 @	.60

SOFTENERS

Acids			
Acetic, 28%, bbls.	100 lb.	2.45 @	2.70
glacial, USP, bbls.	100 lb.	14.00 @	—
Nitric, 36 degrees	cwt.	5.00 @	6.00
Sulfuric, 66 degrees	ton	15.50 @	16.50
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.08½ @	.11¾
Stearic, double pressed	lb.	.10 @	.11
Stearite	lb.	.08 @	—
Alkalies			
Caustic Soda, 76%	cwt.	3.60 @	3.75
Soda Ash, 58% C.L.	cwt.	2.52 @	—

Oils			
Corn, refined, bbls.	lb.	.11½ @	.11¾
Cottonseed, crude	gal.	.093 @	.10
Cycline Oil	gal.	.15 @	.28
Degras, bbls.	lb.	.05¼ @	.06¾
Fluxrite	lb.	.05½ @	.06½
Palm Lagos	lb.	.05 @	—
Niger	lb.	.04¾ @	—
Para-Flux	gal.	.17 @	—
Petrolatum, light	lb.	.03⅛ @	.03¾
Pigmentaroil, tank cars	gal.	.16 @	—
in drums	gal.	.22 @	.23½
Pine, steam distilled	gal.	.64 @	.65
dest. dist., drums	gal.	.44 @	.46
Rosin Oil, cmpd.	gal.	.40 @	—
Rubtack	lb.	.40 @	—
Seedine, c.l.	lb.	.07¼ @	—
Tackol	lb.	.08½ @	.18
Witco Palm Oil	lb.	.05½ @	—
Witco Softener	gal.	.15 @	—
Woburn No. 8, c.l.	lb.	.06 @	—
Wobonite, c.l.	lb.	.05 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.03½ @	—
coal tar	gal.	.07½ @	.08
hardwood	ton	15.00 @	—
pine, 200 lb. gr. wt.	bbl.	4.00 @	4.50
Rosin, grade K, 280 lb.	bbl.	5.90 @	—
Pigmentar, tank cars	gal.	.19 @	—
in drums	gal.	.25 @	.27
R. S. L. Resin	lb.	— @	—
Retort Pine Tar, drums	bbl.	12.00 @	13.00
Solvents			
Acetone, pure	lb.	.09½ @	—
Alcohol, denatured, methanol, No. 1 bbls.	gal.	.28 @	.39
Benzene, 90%	gal.	.18 @	.23
Beta-Trichlorethane	gal.	— @	—
Bondogen	lb.	— @	—
Carbon, bisulfide	lb.	.05¼ @	.08
Carbon, tetrachloride	lb.	.05¼ @	.06
Dichlorethylene	lb.	.29 @	—
Dipentene, cml., drums	gal.	.41 @	.44
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Ethylene dichloride	lb.	.05½ @	.06½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.31 @	—
Plastogen	lb.		
Reogen	lb.		
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Trichlorethylene	lb.	@	.09½
Turpentine, spirits	gal.	.50 @	—
dest. dist., drums	gal.	.47 @	—
Waxes			
Beeswax, white	lb.	.34 @	.35
Carnauba, yellow	lb.	.45 @	.46½
Ceresin, white, dom.	lb.	.08 @	.11
Montan, crude	lb.	.10¾ @	.11¾
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.03½ @	—
White crude scale 124/126	lb.	.03 @	—
Refined, 122/127	lb.	.04½ @	—

ANTI-OXIDANTS

AgeRite, Gel	lb.		
HP	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Flectol-H	lb.	— @	—
Flectol White	lb.	— @	—
Flectol B	lb.	— @	—
Neozone	lb.		
Oxynone	lb.	.66 @	.90
Retardex	lb.	.35 @	.40
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.60

MOLD LUBRICANTS

Aresklene	lb.	— @	—
Cocoa Soapstock	lb.	.06 @	.08
Dipex	lb.	.06 @	.08
Laurex	lb.	.24 @	.30
Rusco, f.o.b. Nitro	lb.	.12 @	.30
Sericite, f.o.b. N. Y.	ton	65.00 @	—
Soap Tree Bark, cut, sifted	lb.	.06 @	.08
Zip (Mold Wash)	lb.	— @	—

FACTICE OR RUBBER SUBSTITUTES

Amberex	lb.	.26 @	—
Black	lb.	.08½ @	—
White	lb.	.08½ @	.13
Brown	lb.	.08 @	.14
Duphax	lb.	.11 @	—

VULCANIZING INGREDIENTS

Sulfur Chloride, yellow (drs.)	lb.	.03½ @	.04½
Sulfur flour			
Refined, 100% pure (bags)	cwt.	2.55 @	3.15
Commercial (bags)	cwt.	1.60 @	2.35
Telloy	lb.		
Vandex	lb.		

Crude Rubber
Latex and Guayule
Reclaimed Rubber
Tires and Tubes

STATISTICS OF THE INDUSTRY

Rim Production
Automobiles
Gasoline
Cotton Prices

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,472	7.42	471,543
1932	409,584	31,936,459	3.47	20,929	2,015,612	4.30	388,655
1933	407,817	44,034,064	4.82	20,537	2,601,352	5.65	427,280
1934	449,322	97,898,519	9.73	23,848	5,770,109	11.23	425,615
1935	453,135	115,299,448	11.36	11,389	3,084,331	12.09	441,746
1934:							
April	43,841	8,232,746	8.37	2,814	588,453	9.18	41,027
May	48,494	10,001,239	9.21	2,389	544,212	10.17	46,105
June*	47,289	10,747,464	10.14	2,012	501,499	11.33	45,277
July	41,443	9,670,617	10.41	2,366	660,199	13.99	39,077
August	31,531	7,873,690	11.15	1,393	400,433	12.83	30,138
Sept.	31,074	8,293,859	11.92	1,665	474,446	12.72	29,409
Oct.	28,318	8,203,447	12.93	2,058	620,754	13.46	26,260
Nov.	36,325	10,470,076	12.87	1,230	327,672	11.89	35,095
Dec.	17,590	4,974,374	12.62	866	240,780	12.46	16,724
1935:							
Jan.	39,675	10,852,398	12.21	977	278,229	12.72	38,698
Feb.	47,271	12,291,242	11.61	1,845	480,440	11.62	45,426
March	45,350	11,801,152	11.62	1,868	486,379	11.62	43,482
April	39,735	10,096,487	11.34	1,096	285,903	11.64	38,639
May	29,278	7,171,025	10.98	793	202,402	11.39	28,485
June	31,240	7,523,598	10.75	524	153,595	13.10	30,716
July	46,987	11,666,577	11.08	489	132,173	12.06	46,498
August	40,249	10,419,056	11.56	476	130,464	12.23	39,773
Sept.	34,659	8,637,048	11.12	468	120,438	11.48	34,191
Oct.	35,091	8,742,222	11.12	651	188,518	12.92	34,440
Nov.	25,050	6,137,160	10.94	380	101,793	11.95	24,670
Dec.	38,417	9,930,710	11.54	1,821	523,997	12.85	36,596
1936:							
Jan.	32,255	8,624,060	11.94	732	229,129	13.98	31,523
Feb.	32,879	9,293,711	12.62	625	199,956	14.27	32,254

* Revised.
Note: Total 1935 figures (revised) subject to further revision.

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All Quantities in Long Tons)

	Guayule Tons	Guayule Dollars	Balata Tons	Balata Dollars	Jelutong Tons	Jelutong Dollars	Liquid Latex (1) Tons	Liquid Latex (1) Dollars
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	—	—	1,208	411,692	5,777	1,019,010	4,650	884,355
1932	—	—	708	147,403	4,607	616,596	5,085	601,999
1933	—	—	1,658	2,261,869	5,989	944,895	11,085	1,833,671
1934	402	75,349	1,054	438,209	4,988	943,752	13,070	3,633,253
1935	468	86,835	626	188,384	5,747	1,063,126	13,553	3,782,222
1935:								
Feb.	—	—	62	20,981	222	33,850	573	179,583
March	—	—	57	15,917	488	80,643	1,290	354,654
April	—	—	51	11,452	419	58,429	1,721	415,100
May	51	9,464	62	12,931	332	51,805	1,427	380,844
June	105	19,502	75	23,809	330	50,165	591	152,665
July	51	9,800	49	15,758	388	62,736	1,144	303,518
August	50	9,464	31	8,963	445	82,179	1,234	370,431
Sept.	18	3,245	29	6,090	1,682	407,418	1,048	291,652
Oct.	48	8,112	27	7,641	208	33,262	1,287	342,101
Nov.	70	11,931	39	11,706	269	50,657	1,023	261,668
Dec.	91	15,317	62	18,269	414	71,885	1,395	391,386
1936:								
Jan.	70	13,182	30	8,924	656	133,948	1,667	474,682
Feb.	75	14,127	100	34,389	396	84,635	1,459	406,985

(1) Weight given in pounds of dry rubber contained in latex.
Note: Total 1935 figures (revised) subject to further revision.

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)
(All Quantities in Long Tons)

	Figures on Monthly Basis: 1929	1930	1931	1932	1933	1934	1935	1936
Jan.	43,002	36,194	28,557	29,648	22,645*	39,190*	47,103	48,506
Feb.	41,594	33,302	28,797	31,821	21,392*	40,515*	43,187	36,746
Mar.	44,730	35,540	32,788	29,505	17,483*	47,003*	42,620	
Apr.	47,521	39,686	33,321	27,518	25,928	44,853*	44,714	
May	49,233	39,386	37,817	30,957	44,074	42,918*	41,568	
June	43,227	34,195	37,916	41,475	50,743*	40,147*	36,623	
July	41,526	29,508	31,397	29,976	49,614*	32,553*	36,384	
Aug.	38,274	30,850	27,586	23,721	44,428*	33,216*	39,242	
Sept.	34,707	25,515	23,638	23,847	35,281*	30,258*	37,553	
Oct.	34,800	27,516	22,277	22,286	31,543*	31,253*	42,436	
Nov.	27,659	23,691	22,943	23,231	28,831*	34,748*	42,778	
Dec.	25,531	21,687	21,409	18,015	28,757*	36,569*	42,942	
Tot.	469,804	375,980	348,986	332,000	400,719*	453,223*	497,150	

* Revised.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

Year	Production	Consumption: Tons	Consumption: % to Crude	Stocks*	Year	Production	Consumption: Tons	Consumption: % to Crude	Stocks*
1926	180,582	164,500	45.9	23,213	1931	133,351	124,126	33.9	19,257
1927	189,144	178,471	47.6	24,980	1932	75,608	77,504	23.4	16,354
1928	208,516	223,000	50.4	24,785	1933	99,560	81,602	19.9	20,746
1929	218,954	226,588	48.4	27,464	1934	110,010	100,597	22.2	23,079
1930	157,967	153,497	40.8	22,000	1935	122,948	112,712	22.7	25,069

	Figures on Monthly Basis: Production	Tons	% to Crude	Stocks*		Production	Tons	% to Crude	Stocks*
1935:									
Jan.	10,465	11,261	23.9	22,291	July	8,421	8,396	23.1	17,810
Feb.	10,072	9,374	23.3	22,989	Aug.	9,557	8,795	22.4	18,272
Mar.	10,549	9,741	22.9	20,637	Sept.	9,041	8,764	23.4	18,260
Apr.	10,315	10,466	23.4	18,716*	Oct.	11,926	9,662	22.8	19,640
May	10,223	9,938	23.9	18,541	Nov.	11,482	9,084	21.2	21,478
June	8,590	8,710	23.8	17,932	Dec.	12,307	8,521	19.8	25,069
1936:									
Jan.	11,665	10,039	20.7	26,145	July	.....	.....	...	.....
Feb.	10,188	7,366	20.1	28,267	Aug.	.....	.....	...	.....
Mar.	.....	.....	...	.....	Sept.	.....	.....	...	.....
April	.....	.....	...	.....	Oct.	.....	.....	...	.....
May	.....	.....	...	.....	Nov.	.....	.....	...	.....
June	.....	.....	...	.....	Dec.	.....	.....	...	.....

* Stocks on hand at the end of month or year.
a Revised.

U. S. Consumption of Gasoline

(Bureau of Mines Statistics)
(In Thousands of Barrels of 42 Gallons)

	1934*	1935*	1936		1934*	1935*	1936
January	29,489	28,062	32,553	August	39,105	42,836	
February ...	25,310	26,432	27,401	September ..	34,669	37,862	
March	30,577	31,997		October ...	37,674	41,401	
April	32,736	36,082		November ..	34,998	35,956	
May	38,071	39,095		December ..	30,581	33,734	
June	36,430	37,890					
July	37,466	41,209		Total ...	407,106	432,556	

* Revised on basis of final annual figures issued by Bureau of Mines.

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total		Total		Total
1924	21,863,311	1928	24,247,482	1932	6,261,336
1925	26,001,664	1929	24,141,502	1933	8,713,962
1926	24,199,524	1930	17,364,096	1934	12,255,118
1927	19,700,003	1931	11,253,800	1935	18,664,356

1936:		1936:		1936:	
January ...	1,877,448	May	.....	September..	.....
February ..	1,260,590	June	.....	October ...	.....
March	1,840,723	July	.....	November ..	.....
April	.....	August	.....	December ..	.....

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1933																																
December	9¼	9¼	—	9⅛	9⅛	8⅛	9⅛	8⅝	8⅝	—	8⅜	8⅝	8⅝	8¾	8¾	8⅛	—	8⅛	8¼	8⅛	8⅛	8⅛	8⅛	—	—	8⅞	8⅞	9	9	—	—	8⅜
1934																																
January	9	—	8⅛	9	9	9	10⅛	10⅛	10⅛	8⅞	8⅞	8⅞	8⅞	—	9⅛	9	8¾	9⅛	9⅞	9¾	—	9⅛	9⅛	9¼	9¾	9⅛	10	10⅛	—	10	10	9⅜
February	9⅞	9⅛	—	—	10⅛	10⅛	10⅜	10⅜	10⅛	10⅛	—	—	10⅝	10⅞	10⅝	10⅛	10⅛	10⅛	10½	10⅜	10½	10⅞	10⅜	10⅜	10⅜	—	10⅜	10⅜	—	—	—	10½
March	10⅛	10½	—	11⅛	11⅛	11⅛	11⅝	11⅝	11⅝	11⅛	11⅛	11⅛	11⅝	11⅝	11⅝	11⅝	11⅝	11⅝	11⅞	11⅞	11⅞	11⅞	11⅛	11⅛	11⅛	10⅞	11⅛	10⅞	11⅛	—	—	11
April	11¼	11¼	—	11½	15	15⅛	15⅛	15⅛	15⅛	13⅜	13⅜	13⅜	13⅜	12⅞	12⅞	12⅞	12	12⅞	13	13⅜	13⅜	12⅞	12⅞	12⅝	12⅝	12⅝	12⅝	12⅛	12⅜	13⅜	—	12⅜
May	14⅜	14⅜	—	14⅞	13⅝	13⅝	13⅝	13⅝	13⅝	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	14⅛	14⅛	13⅝
June	13	14	—	13	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜
July	—	—	—	—	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜	14⅜
August	14⅛	14⅛	—	14⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛
September	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
October	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
November	14½	13⅜	13⅜	14	13	13	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	12⅞	13⅛	13⅛	14⅛	12⅞	13	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	14—	13⅛
December	13⅜	—	12⅞	13	13	13⅜	13⅜	13⅛	—	12⅛	12⅛	12⅛	12⅛	12⅛	13	13	13	13	13	13	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	13	13⅜	13⅛	13⅛
1935																																
January	13⅜	13½	13½	13½	13½	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜
February	12⅜	12⅜	—	12⅜	12⅜	12⅜	12⅜	13⅛	13⅛	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜
March	12⅝	12⅝	—	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝	12⅝
April	11⅞	11⅞	—	11⅞	11	11	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛
May	11½	11½	—	11⅞	11½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½
June	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
July	12⅛	12⅛	—	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
August	12⅛	12⅛	—	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
September	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
October	11⅜	11⅜	—	11⅜	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛
November	13⅛	13⅛	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜
December	—	—	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞	12⅞
1936																																
January	13½	—	13⅜	13⅜	—	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜	13⅜
February	15⅞	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝	15⅝
March	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛
April	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1929

Year	Cents	Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50	1926	48.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45	1927	37.72
1912	121.60	1916	72.50	1920	36.30	1924	26.20	1928	22.48
1913	82.04	1917	72.23	1921	16.36	1925	72.46	1929	20.55

Average Monthly Price per Pound Since 1930

	1930 Cents	1931 Cents	1932 Cents	1933 Cents	1934 Cents	1935 Cents	1936 Cents
Jan.	15.24	8.34	4.38	3.08	9.32	13.10	14.35
Feb.	15.85	7.70	4.03	2.95	10.45	12.92	15.48
Mar.	15.34	7.71	3.35	3.01	11.01	11.51	15.89
Apr.	14.93	6.43	3.02	3.56	12.10	11.55	
May	14.24	6.49	3.09	4.95	13.26	12.05	
June	12.45	6.35	2.66	6.15	13.51	12.57	
July	11.24	6.37	2.89	8.01	14.60	12.10	
Aug.	9.96	5.38	3.63	7.31	15.47	11.98	
Sept.	8.28	5.08	3.84	7.30	15.36	11.55	
Oct.	8.20	4.87	3.65	7.64	13.96	12.62	
Nov.	9.01	4.65	3.44	8.66	13.04	13.15	
Dec.	9.05	4.64	3.24	8.87	12.98	13.28	
Average for Year	11.98	6.17	3.49	5.96	12.92	12.37	

London Closing Prices of Ribbed Smoked Sheets

(In Pence Per Pound)

Day	1936 Jan.	1936 Feb.	1936 Mar.	1936 Apr.	Day	1936 Jan.	1936 Feb.	1936 Mar.	1936 Apr.
1	—	6 11/16	—	7 3/8	17	6 7/8	7 7/16	7 7/16	
2	6 7/16	—	7 3/8	7 7/16	18	6 11/16	7 7/16	7 7/16	
3	6 7/16	7	7 3/8	7 1/2	19	—	7 7/16	7 7/16	
4	6 7/16	7	7 3/8	7 1/2	20	6 11/16	7 7/16	7 7/16	
5	—	7	7 7/16	—	21	—	7 3/8	7 7/16	
6	6 5/8	7 1/8	7 1/2	7 1/2	22	6 11/16	7 3/8	—	
7	6 5/8	7 7/16	7 1/2	7 1/2	23	6 11/16	—	7 1/2	
8	6 11/16	7 1/4	—	7 7/16	24	6 11/16	7 3/8	7 1/2	
9	6 11/16	—	7 7/16	—	25	7	7 7/16	7 7/16	
10	6 3/4	7 7/16	7 1/2	—	26	—	7 1/4	7 7/16	
11	6 3/4	7 7/16	7 11/16	—	27	7	7 3/8	7 7/16	
12	—	7 7/16	7 7/16	—	28	—	7 3/8	7 7/16	
13	6 3/4	7 3/8	7 3/8	—	29	6 13/16	7 3/8	—	
14	6 3/4	7 3/8	7 7/16	—	30	6 13/16	—	7 7/16	
15	6 13/16	7 3/8	—	—	31	6 13/16	—	7 7/16	
16	6 7/8	—	7 7/16	—					

Average Monthly Price Per Pound

Month	1933 Pence	1934 Pence	1935 Pence	1936 Pence	Month	1933 Pence	1934 Pence	1935 Pence	1936 Pence
Jan.	2.264	4.429	6.434	6.758	Aug.	3.811	7.401	5.696	
Feb.	2.093	4.920	6.292	7.255	Sept.	3.728	7.409	5.508	
Mar.	2.099	5.136	5.745	7.450	Oct.	3.957	6.806	6.130	
Apr.	2.323	5.712	5.604		No.	4.096	6.294	6.308	
May	2.966	6.207	5.822		Dec.	4.200	6.295	6.340	
June	3.392	6.245	6.027		Average for Year	3.233	6.159	5.976	
July	3.860	7.053	5.801						

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Date	1936 Feb.	1936 Mar.	1936 Apr.	Date	1936 Feb.	1936 Mar.	1936 Apr.	Date	1936 Feb.	1936 Mar.	1936 Apr.
1	11.60	—	11.56	11	11.80	11.41		22	—	—	
2	—	11.28	11.69	12	—	11.46		23	—	11.47	
3	11.75	11.23	11.62	13	11.70	11.38		24	11.31	11.48	
4	11.60	11.20	11.60	14	11.80	11.36		25	11.25	**11.47**	
5	11.45	11.24	—	15	11.70	—		26	**11.25**	**11.51**	
6	11.60	11.30	11.56	16	—	11.41		27	11.27	11.64	
7	11.65	11.32	11.64	17	11.65	11.43		28	11.33	11.70	
8	11.65	—	11.70	18	11.55	11.41		29	11.30	—	
9	—	11.32		19	11.55	11.44		30	—	11.69	
10	11.75	11.35		20	11.50	11.43		31	—	1.72	
				21	11.45	11.46					

Average Monthly Price Per Pound

	1933 Cents	1934 Cents	1935 Cents	1936 Cents		1933 Cents	1934 Cents	1935 Cents	1936 Cents
Jan.	6.23	11.25	12.70	11.91	Aug.	9.55	13.40	11.48	
Feb.	6.05	12.28	12 58	11.53	Sept.	9.64	13.00	10.80	
Mar.	6.39	12.30	11.63	11.43	Oct.	9.58	12.48	11.28	
Apr.	7.02	11.80	11.73		Nov.	10.04	12.53	12.01	
May	8.64	11.44	12.25		Dec.	10.17	12.76	11.99	
June	9.47	12.20	11.89		Average for Year	8.63	12.36	11.88	
July	10.76	12.84	12.26						

World Stocks of Crude Rubber

(All figures are in long tons)

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1934	ON HAND 1935	ON HAND 1936	AFLOAT 1934	AFLOAT 1935	AFLOAT 1936	ON HAND AND AFLOAT 1934	ON HAND AND AFLOAT 1935	ON HAND AND AFLOAT 1936
Jan.	368,660	348,931*	276,372	45,768	42,066	43,870	414,428	390,997*	320,242
Feb.	358,681*	339,335*	273,284	53,063	42,969	46,532	411,744*	382,304	319,816
Mar.	352,897*	338,700		54,722	44,485		407,619*	383,185	
Apr.	351,073*	334,954		56,251	37,651		407,324*	372,605	
May	350,935*	319,281		57,921	44,375		409,250	363,656	
June	358,461*	320,470		46,698	55,581		404,847	376,051	
July	365,072	330,528		45,869	49,018		410,941	379,546	
Aug.	363,711*	329,548		40,278	47,724		403,989*	377,272	
Sept.	360,623*	326,236		38,831	43,413		399,454	369,649	
Oct.	362,571*	317,850		38,247	49,913		400,818*	367,763	
Nov.	362,826*	303,162		38,625	46,588		401,451*	349,750	
Dec.	355,000*	295,438		47,644	39,094		402,644*	334,532	

(Rubber Manufacturers' Association figures raised to 100%)

* Revised.

STOCKS IN GREAT BRITAIN

(No. of Tons in Wharves and Warehouses, not including Latex)

At end of	London 1934	London 1935	London 1936	Liverpool 1934	Liverpool 1935	Liverpool 1936
January	38,570	81,807	84,791	51,702	66,405	77,188
February	38,752	87,605	79,757	52,730	67,983	77,138
March	40,501	92,664		53,813	69,218	
April	42,413	94,361		53,695	70,584	
May	42,190	95,722		54,007	71,927	
June	45,674	98,077		54,028	73,131	
July	50,490	99,226		55,414	74,915	
August	48,953	101,574		56,246	75,584	
September	56,103	101,198		56,848	76,263	
October	63,079	94,749		57,818	76,400	
November	67,656	90,542		60,106	76,301	
December	72,285	86,551		62,505	77,589	

(Figures from the Rubber Trade Association of London)

STOCKS IN OTHER CENTRES

(Figures from Statistical Bulletin of the Int'l Rubber Regulation Committee)

At end of 1935	Penang and Singapore [1]	Malaya [2]	Ceylon [3]	Holland	Para and Manaos
March	55,100	35,969	5,188	1,551	4,847
April	48,827	37,896	4,611	1,536	4,626
May	54,740	36,605	4,647	1,499	4,222
June	51,770	38,209	4,271	1,481	4,036
July	49,958	39,140	4,700	1,448	4,441
August	46,482	34,541	4,866	1,455	4,571
September	33,872	33,489	4,403	1,442	4,673
October	37,597	34,271	3,790	1,440	4,346
November	32,597	34,197	4,393	1,550	4,062
December	28,304	34,015	4,794	1,553	4,683
At end of 1936					
January	31,195	35,423	4,409	1,568	4,496

[1] Dealers' and Port Stocks. [2] Inside Regulated Areas. [3] Dealers' Stocks Only.

RUBBER STOCKS AFLOAT

End of: 1935	Afloat for United States	Afloat for Europe	All Other * Afloat	Total * Afloat
February	42,969	28,750	31,281	103,000
March	44,485	30,400	17,115	92,000
April	37,651	31,400	29,949	99,000
May	44,375	30,300	29,325	104,000
June	55,581	27,485	17,934	101,000
July	49,018	29,150	17,832	96,000
August	47,724	32,800	21,476	102,000
September	43,413	31,090	26,497	101,000
October	49,913	29,000	20,087	99,000
November	46,588	26,250	16,162	89,000
December	39,094	25,200	18,706	83,000
End of 1936:				
January	43,870	25,000	13,130	82,000
February	46,532	25,000 P	10,460	82,000

* *Total Afloat* is an arbitrary estimate based on 1½ months' shipments as adopted by the Department of Commerce. *All Other Afloat* is determined by subtracting the amount of stocks in transit to the United States and Europe from the estimated total.

P—Preliminary estimate.

TOTAL WORLD STOCKS

At end of	1931	1932	1933	1934	1935	1936
January	510,296	638,416	634,797	661,948	698,153	582,000
February	516,123	626,819	626,227	663,308	686,195	
March	532,080	629,894	638,428	666,382	678,809	
April	531,832	630,803	629,159	658,796	677,006	
May	528,855	627,474	626,537	689,239	677,569	
June	533,021	595,712	613,055	672,804	671,525	
July	548,794	589,037	618,258	676,200	679,061	
August	555,931	597,274	617,449	674,702	680,644	
September	561,838	599,986	623,683	694,361	661,509	
October	588,873	609,368	636,597	680,616	655,000	
November	605,684	614,342	642,968	684,408	623,300	
December	628,826	629,898	654,890	705,975	597,149	
Monthly Average	553,513	615,752	630,171	677,395	665,493	

(Figures from the Survey of Current Business)

U. S. Tire and Tube Statistics[1]

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1928	1929	1930	1931	1932	1933	1934	1935
Production	77,944	68,726	50,965	48,739	40,085	45,304	47,233	49,362
Shipments	74,296	69,395	53,638	48,151	40,260	44,094	46,687	50,357
Inventory [2]	13,624	11,838	9,003	7,775	7,644	8,888	9,455	8,196

Figures for Recent Months

	PRODUCTION 1934	PRODUCTION 1935	PRODUCTION 1936	SHIPMENTS 1934	SHIPMENTS 1935	SHIPMENTS 1936	INVENTORY 1934	INVENTORY 1935	INVENTORY 1936
Jan.	3,922	4,626	4,579	3,222	3,663	3,875	9,684	10,398	8,918
Feb.	4,335	4,383		3,285	3,287		10,725	11,530	
Mar.	5,180	4,346		4,223	4,204		11,651	11,675	
Apr.	4,470	4,512		4,438	5,144		11,981	11,003	
May	4,456	4,175		5,332	4,067		11,127	11,131	
June	4,342	3,910		5,228	4,262		10,219	10,755	
July	3,353	3,532		4,157	5,447		9,437	8,850	
Aug.	3,533	3,993		4,308	4,739		8,697	7,805	
Sept.	2,936	3,787		3,183	3,303		8,419	8,288	
Oct.	3,287	4,051		3,010	4,095		8,657	8,291	
Nov.	3,341	3,997		3,191	3,990		8,779	8,249	
Dec.	3,778	4,051		3,109	4,154		9,455	8,196	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1928	1929	1930	1931	1932	1933	1934	1935
Production	80,180	68,829	52,420	48,333	36,891	42,546	46,228	47,879
Shipments	77,127	70,592	54,938	50,021	37,911	41,391	45,046	48,241
Inventory [2]	16,117	12,807	9,999	7,922	6,749	7,815	9,180	8,231

Figures for Recent Months

	PRODUCTION 1934	PRODUCTION 1935	PRODUCTION 1936	SHIPMENTS 1934	SHIPMENTS 1935	SHIPMENTS 1936	INVENTORY 1934	INVENTORY 1935	INVENTORY 1936
Jan.	3,530	4,259	4,734	3,199	3,722	4,297	8,403	9,621	8,889
Feb.	4,077	4,171		3,323	3,362		8,445	10,466	
Mar.	5,194	4,123		4,118	4,168		10,244	10,406	
Apr.	4,735	4,259		4,342	4,453		10,585	10,170	
May	4,359	3,892		4,902	3,451		10,043	10,615	
June	4,097	3,480		5,309	4,024		8,795	10,050	
July	3,531	3,251		4,323	5,269		8,053	8,005	
Aug.	3,680	3,894		4,198	4,556		7,555	6,939	
Sept.	3,110	4,125		3,024	3,426		7,639	7,565	
Oct.	3,219	4,435		2,689	4,110*		8,151	8,053	
Nov.	3,169	3,942		2,767	3,801*		8,503	8,161	
Dec.	3,503	4,048		2,850	4,084*		9,180	8,231	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete for 1929-1933. Beginning 1934, the Association reported its figures to be 97% complete.

(2) Held by manufacturers at end of period indicated.

(*) Revised.

Automobile Production

	United States Total	United States Passenger Cars	United States Trucks	Canada Total	Canada Passenger Cars	Canada Trucks	Grand Total
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932	1,370,678	1,135,493	235,187	60,816	50,718	10,098	1,431,494
1933*	1,920,057	1,573,512	346,545	65,924	53,855	12,069	1,992,126
1934*	2,753,111	2,177,919	575,192	116,852	92,647	24,205	2,869,963
1935	4,009,496	3,285,836	723,660	172,995	139,742	33,253	4,182,491
1935 [1]							
Feb.	335,667	275,623	60,044	18,114	13,885	4,229	353,781
March	429,793	361,816	67,977	21,975	18,179	3,796	451,768
April	477,691	401,628	76,063	24,121	20,686	3,435	501,812
May	364,662	307,522	57,140	20,765	17,093	3,672	385,427
June	361,248	296,609	64,639	15,745	12,276	3,469	376,993
July	336,985	276,084	60,901	13,069	9,471	3,598	350,054
Aug.	239,994	182,389	57,605	7,692	5,524	2,168	247,686
Sept.	89,804	57,285	32,519	5,323	3,819	1,504	95,127
Oct.	275,024	214,609	60,415	8,313	7,128	1,185	283,337
Nov.	398,039	338,425	59,614	13,496	12,042	1,454	411,535
Dec.	407,804	344,613	63,191	13,775	11,370	2,405	421,579
1936							
Jan.	367,252	299,936	67,326	13,302	11,261	2,041	380,554
Feb.	290,964	226,452	64,512	13,268	10,853	2,415	304,232

* Revised.

[1] Figures for the complete period of 1935 were revised by the Bureau of the Census, Department of Commerce, on January 24, 1936.

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA [1]							DUTCH EAST INDIES [5]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon [2]	India & Burma [3]	Sarawak [4]	British North Borneo [5]	Siam [4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China [5]	Amazon Valley	All Other [6]	World Total [7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,247	4,218	75,952	87,747	116,009	11,696	12,121	3,292	792,203
1932	478,252	92,539	385,713	48,973	3,888	6,960	4,664	3,451	61,312	79,837	85,871	13,883	6,450	1,816	702,818
1933	573,412	167,377	406,035	63,351	4,527	10,874	7,555	7,765	73,851	91,861	149,659	18,394	9,883	2,737	846,312
1934	677,361	211,803	465,558	79,746	10,492	17,233	11,103	17,545	87,400	112,058	175,470	20,170	8,903	2,985	1,008,663
1935	590,522	176,705	413,817	53,584	13,134	20,850	8,868	28,051	57,479	78,362	135,247	29,949	11,125	5,055	856,245
1934:															
Jan.	55,055	16,128	38,927	6,929	1,531	1,197	805	1,290	6,513	7,975	13,913	1,109	576	127	80,892
Feb.	57,867	15,027	42,840	8,620	775	1,005	805	1,264	6,706	9,211	13,696	1,232	831	105	87,090
March	58,515	19,907	38,608	6,750	1,412	1,360	806	1,363	8,655	10,539	19,084	1,968	846	113	91,504
April	56,748	20,957	35,791	5,157	762	1,447	894	1,311	7,282	9,808	19,250	1,330	440	236	83,708
May	69,403	25,691	43,712	8,870	1,106	1,892	1,397	997	12,104	14,606	26,598	1,243	726	328	113,579
June	53,282	20,981	32,301	5,397	1,425	1,886	644	1,497	4,860	6,192	15,956	1,593	765	377	72,893
July	53,335	22,829	30,506	3,818	710	1,662	1,048	2,399	5,762	7,369	14,415	1,703	353	252	69,997
Aug.	52,641	17,865	34,776	4,948	552	1,714	1,048	1,908	5,340	8,901	11,356	1,610	710	251	73,114
Sept.	61,051	17,889	43,162	6,555	294	1,438	839	1,626	5,722	10,738	14,688	1,665	764	222	87,713
Oct.	47,045	10,226	36,819	6,544	413	1,412	1,196	1,328	5,970	6,643	5,556	1,413	840	401	68,535
Nov.	51,140	8,759	42,381	6,756	501	953	941	1,356	7,621	7,123	5,338	2,356	1,017	334	76,676
Dec.	59,575	15,375	44,200	8,481	990	1,237	680	2,043	10,865	12,953	12,354	2,956	1,035	239	98,033
1935															
Jan.	56,720	17,142	39,578	5,202	2,269	1,630	1,222	2,614	3,812	5,371	8,704	2,650	1,196	460	74,719
Feb.	50,593	17,676	32,917	5,556	731	1,887	760	2,288	4,395	7,663	15,194	2,076	636	254	74,154
Mar.	47,407	13,437	33,970	3,181	701	1,901	773	2,076	5,592	7,950	7,973	1,472	740	526	66,855
Apr.	53,360	16,029	37,331	2,976	370	1,895	846	1,661	5,574	6,873	12,683	2,827	963	185	74,957
May	51,353	23,720	27,633	4,223	674	2,323	848	2,752	6,217	7,931	21,058	2,138	832	315	76,920
June	49,751	18,637	31,114	3,525	1,077	2,031	603	2,869	5,698	8,258	14,168	2,021	659	393	72,416
July	48,975	11,257	37,718	4,106	580	1,870	1,164	1,939	5,899	5,664	8,373	2,015	427	407	70,162
Aug.	51,873	10,978	40,895	5,683	724	759	566	2,062	4,661	6,923	8,875	2,451	1,150	442	74,541
Sept.	51,247	10,418	40,829	3,970	681	1,797	421	2,278	4,089	5,862	9,422	2,248	1,017	493	73,107
Oct.	48,258	19,364	28,894	5,932	1,198	2,168	1,040	2,622	3,937	6,698	16,432	2,748	1,240	462	73,371
Nov.	43,147	10,518	32,629	4,288	1,806	1,356	455	2,155	3,724	3,963	8,511	2,392	936	587	62,802
Dec.	37,838	7,529	30,309	4,942	2,323	1,233	171	2,735	3,881	5,206	3,854	4,911	1,329	531	61,425
1936:															
Jan.	39,101	12,582	26,519	4,131	1,006	2,385	938	1,665	4,315	6,347	9,270	2,449	1,756	500	61,281
Feb.	38,436	18,857	19,579	3,664	1,280	2,111	529	3,663	4,789	6,643	15,479	2,892	1,200	500	62,329

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons in 1924, 6 tons in 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons in 1924, 2,239 tons in 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. * Figure is provisional: final figure will be shown when available.

NOTE: THE FIGURES FOR 1933 ARE REVISED AS OF JANUARY 25, 1935 AND REPRESENT FINAL FIGURES

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States [1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,638
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1932	393,844	44,086	42,506	45,121	20,917	56,027	14,469	30,637	12,576	9,519	2,851	7,262	4,359	9,444	693,618
1933	398,365	73,335	61,953	54,120	19,332	66,831	19,341	29,830	13,534	11,166	1,243	7,831	5,520	10,402	772,803
1934	439,172	158,482	49,560	59,330	28,439	69,905	21,398	47,271	9,642	9,115	3,758	12,418	6,900	10,999	926,389
1935	455,758	128,829	51,450	62,899	26,870	57,567	21,880		9,978	7,593	4,068	11,878	8,140	11,245	
1934:															
July	40,308	12,266	4,051	5,494	2,430	5,739	708	1,640	732	810	540	1,602	747	1,094	78,161
Aug.	31,405	13,728	3,660	3,078	1,948	4,945	1,795	6,829	658	669	239	1,033	277	1,495	71,759
Sept.	30,345	11,254	4,244	2,607	2,770	7,346	1,486	4,487	743	501	339	980	465	477	68,044
Oct.	27,323	18,897	3,424	2,148	3,043	7,227	1,296	3,681	798	693	447	813	675	254	70,719
Nov.	35,982	15,875	3,176	3,425	1,568	5,580	1,764	4,488	516	379	187	1,382	542	215	75,079
Dec.	17,305	15,816	3,605	5,207	2,849	3,904	1,979	6,460	1,312	—168	139	1,143	615	762	60,928
1935															
Jan.	39,546	20,383	5,573	4,286	2,670	4,400	1,613	3,446	1,099	419	158	1,252	468	1,245	86,558
Feb.	45,999	15,609	4,593	3,513	1,558	5,582	4,356	1,810	848	399	477	838	567	1,836	87,985
Mar.	44,772	12,810	4,017	6,353	2,710	4,421	1,582	4,624	1,459	240	331	891	630	741	85,581
Apr.	40,061	11,574	3,306	5,820	1,063	6,635	1,653	3,387	1,150	520	329	1,049	432	789	78,115
May	29,962	12,498	3,828	6,049	3,929	5,429	935	1,937	671	982	272	853	815	774	68,934
June	31,410	10,253	3,210	4,551	1,435	3,373	1,831	3,087	496	1,065	446	780	745	604	66,286
July	47,694	9,454	3,247	4,929	1,319	4,484	1,298	1,823	520	572	157	800	548	185	77,030
Aug.	41,057	14,120	4,508	4,790	2,814	4,453	916	1,227	655	528	413	820	752	673	77,726
Sept.	35,256	11,223	3,740	5,453	1,604	3,590	1,696	1,593	449	806	282	1,030	793	914	68,429
Oct.	35,770	3,184	5,175	6,074	812	4,727	2,500*	4,876	829	539	671	1,000	597	742	67,496
Nov.	25,756	2,942	4,731	6,258	4,389	4,361	2,000*	4,858	783	449	245	1,206	1,044	1,276	60,298
Dec.	38,072	4,779	5,522	4,823	2,567	6,112	2,500*		1,019	1,074	287	1,359	750	1,466	
1936:															
Jan.	33,260	4,573	6,755	5,545	1,759	4,355	2,500*		1,260		369	736		767	
Feb.	33,789	1,271							735		106				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1] United States imports of guayule are included in this compilation. * Figure is provisional; final figure will be shown immediately it becomes available.